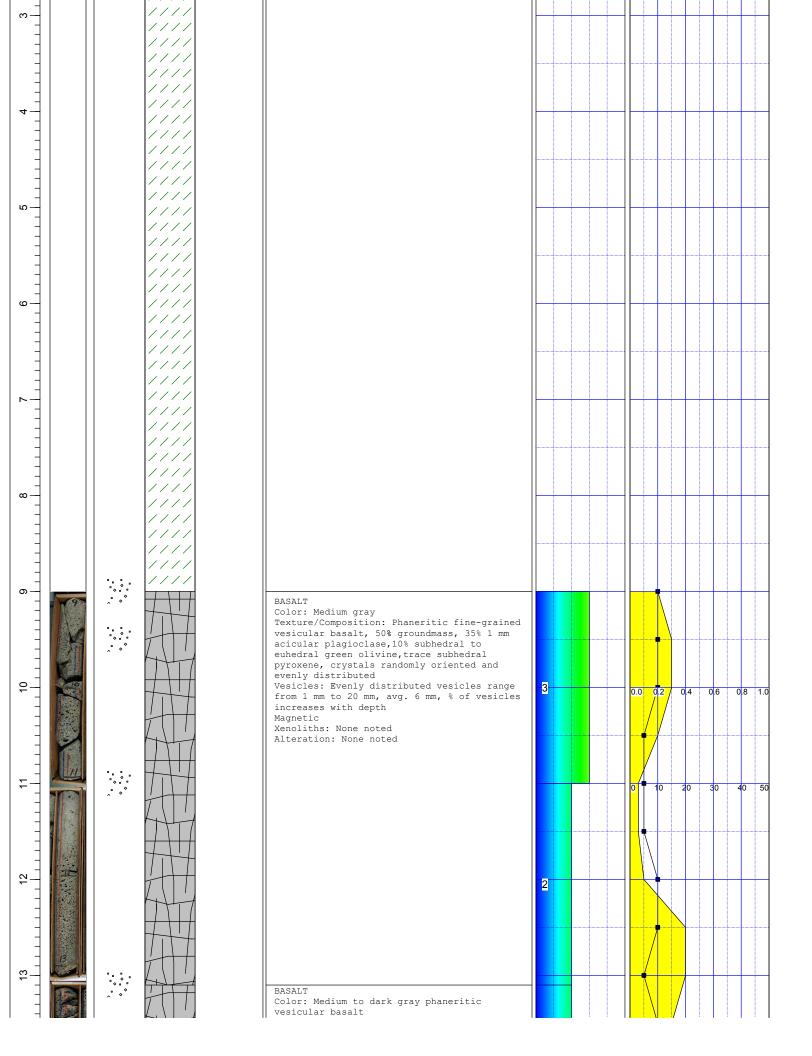
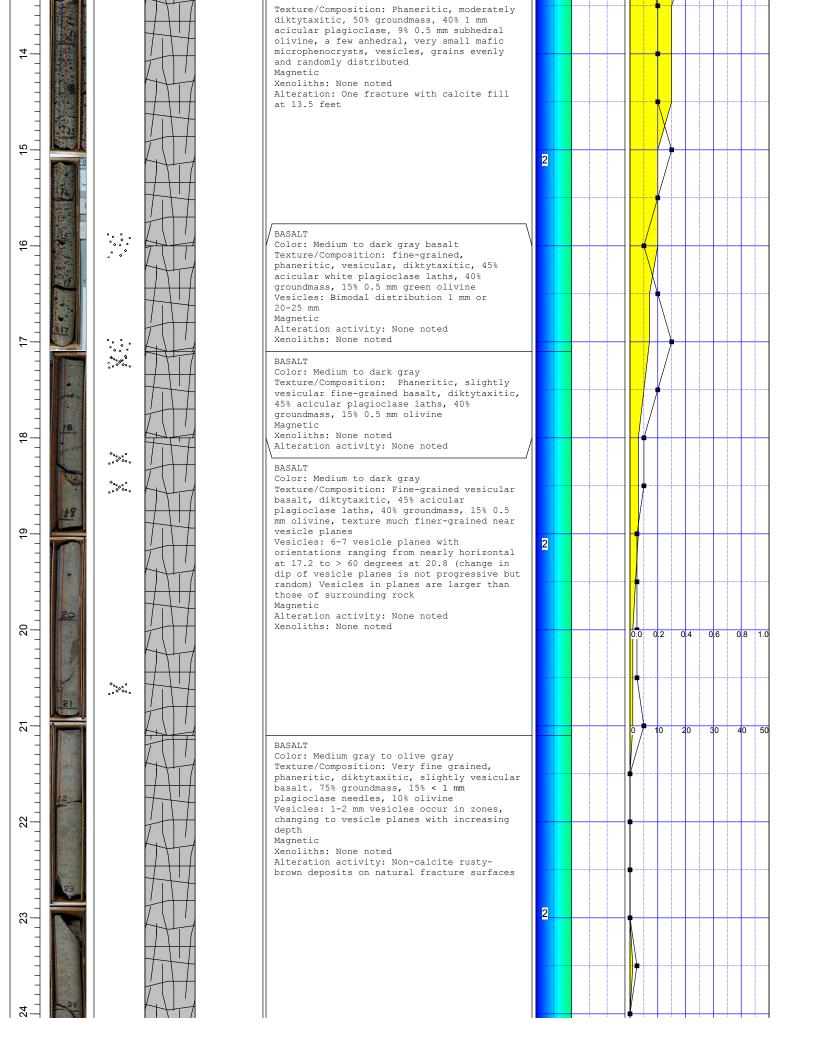
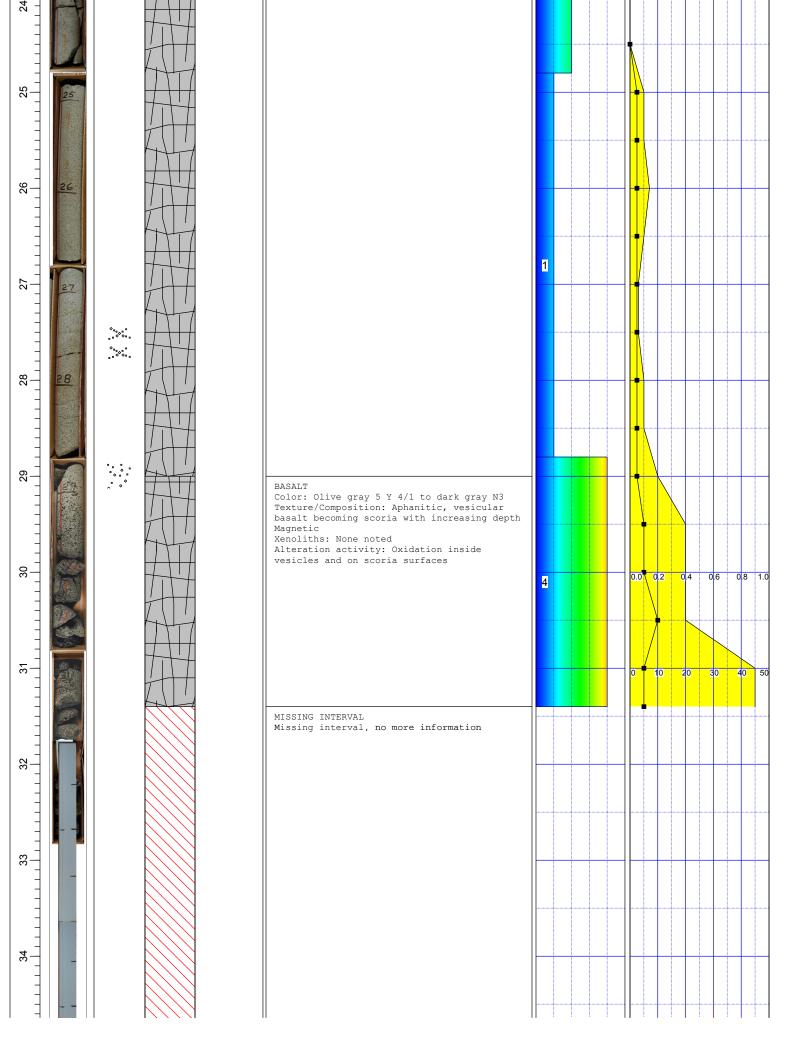
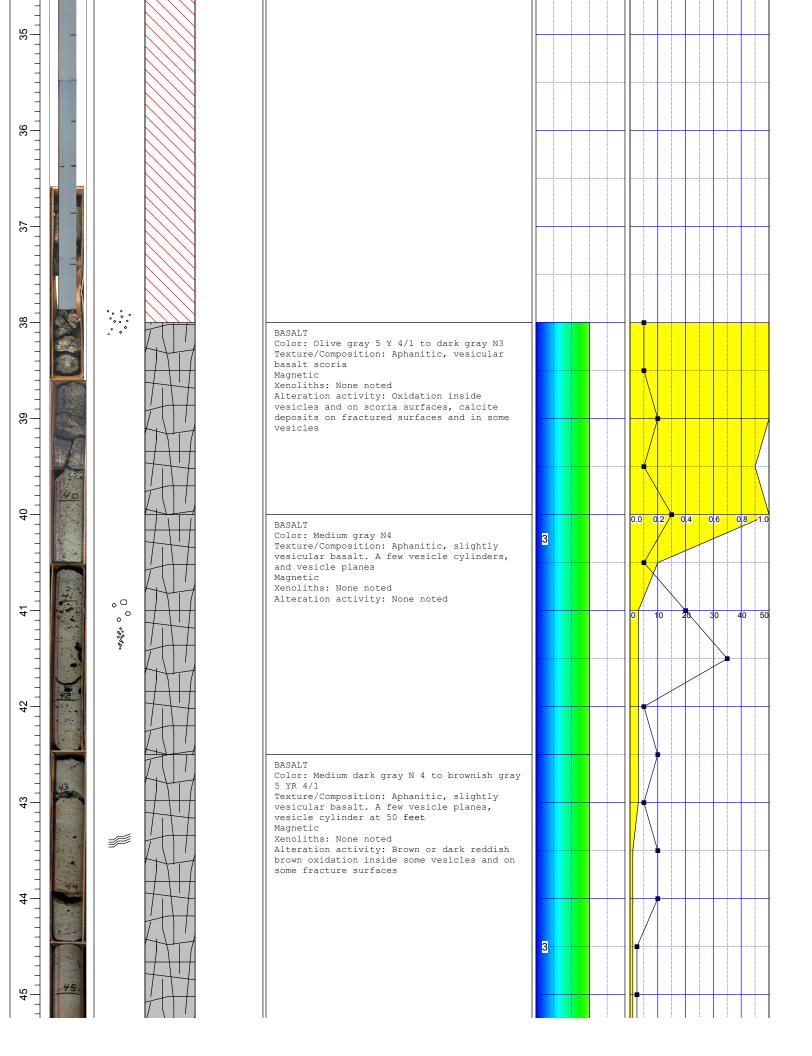
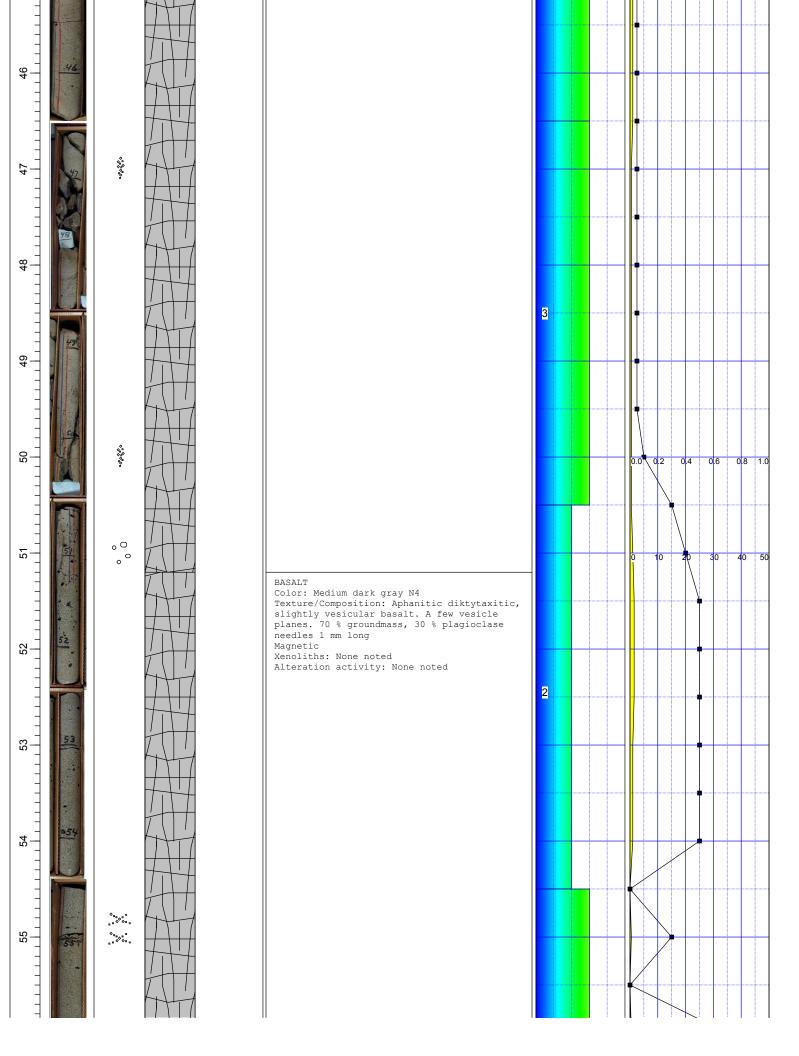
## INL Lithologic Core Storage Library Contact: Linda C. Davis Idaho National Laboratory PO Box 8072 **Building CFA-663** Pocatello, ID. Operated by the U.S. Geological Survey 83209 for the U.S. Department of Energy Logged By: M.K. Hodges, June 2004 Official Name: USGS 132 Selected Aliases: USGS 132 USGS Site ID:432906113025001 Total Core Recovered (ft):1,234 County & State: Butte County, ID. Beginning Depth (ft): 9 Contractor Well ID:none yet Quadrangle Name: Big Southern Butte Lat / Lng: 43° 29' 06.68" 113° 02' 50.93" NAD27 Ending Depth (ft): 1,238 Drilling Agency: USGS Continuous Recovery Year Drilled: 2004 Tns / Rng / Sec: 02N 29E 19 cab1 Names of Drillers: M. Gilbert and M. Vance Selected Intervals Recovered UTM Coordinates: 12N 334425.709 4816517.231 Total # of Core Boxes: 145 Altitude (ft): 5,028 (ft) NDVD29 Well Status: Complete Notes: Sediment samples to Kari Winfield 25 June 2004, photographed by Linda C. Davis; selected Total Depth of Hole (ft): 1,238 samples removed for paleomagnetic analysis by Duane Champion, Volcanic Hazards Team, **Core Geological Profile Lithologic Patterns Soil Patterns Intervals in Absentia** (See Unified Soil Classification System.) **Basalts** Gravels - clean Sands with fines Surficial material Interval not cored Rhyolites Gravels with fines Silts and clays Natural void Missing interval Sedimentary Rock Sands - clean **Igneous and Sedimentary Structure Symbols Soil Structure Symbols** Vesicle zone 8/1 Pipe vesicles Ripple marks 1 Structureless - Single Grained ٥٥ <u>。</u>。 Large vesicles 3 **Pillows** Mud cracks Structureless - Massive 7777 Imbricated bedding Vesicle Sheet Platy Vesicle planes ... 908780AQ 200 Prismatic Mega vesicles Flow/Mold Graded bedding Granular (W)(C)(C)(C) Columnar 鐍 Vesicle Cylinders Spatter feature Cross bedding X Blocky കുക Vesicle Characteristics Fracture (feet & tenths) Soil and Structures Frequency Mean Size (in) (See fracture 0.2 0.4 0.6 0.8 1.0 Photo classification on Description Lithology website.) gneous, Volume Percentage Depth Core 20 30 40 10 2 3 4 5 Miscellaneous Text Lithologic Description SURFICIAL MATERIAL Surficial material, not cored

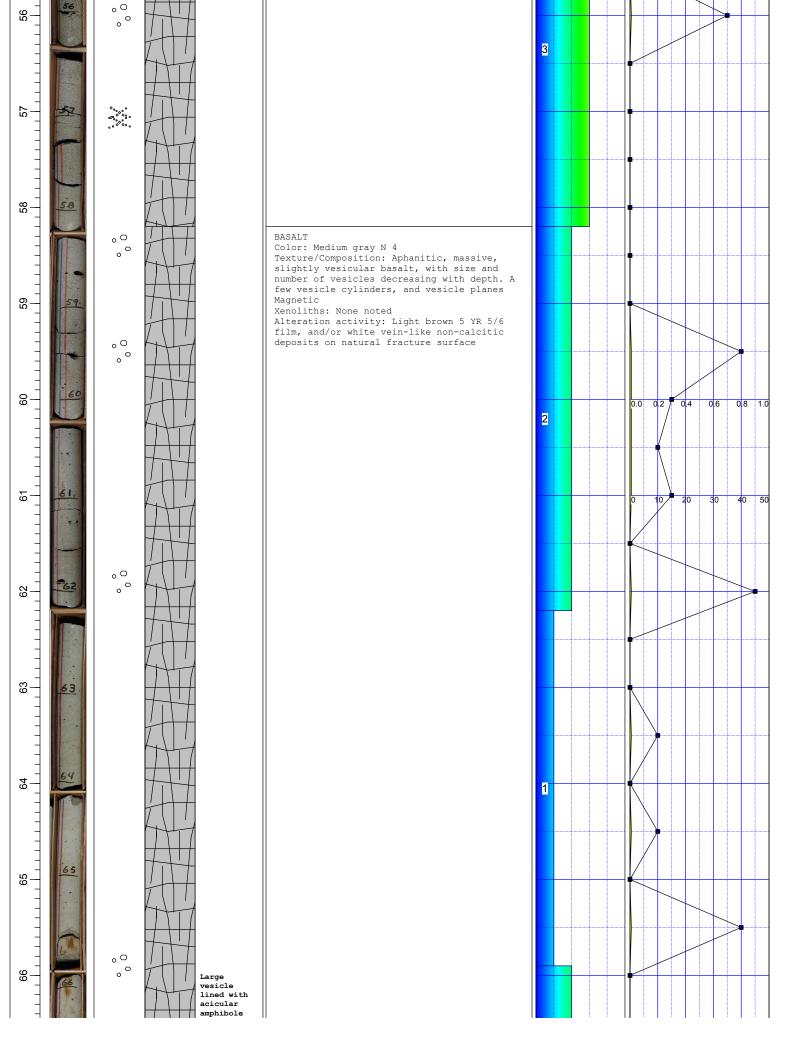


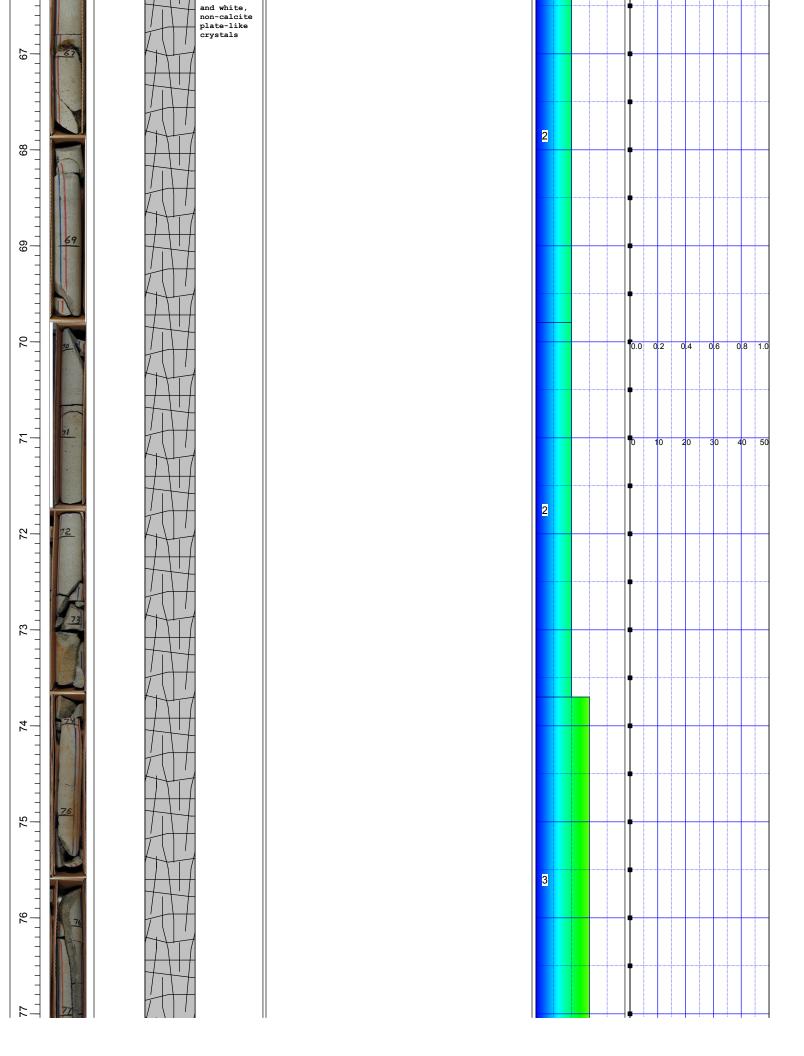


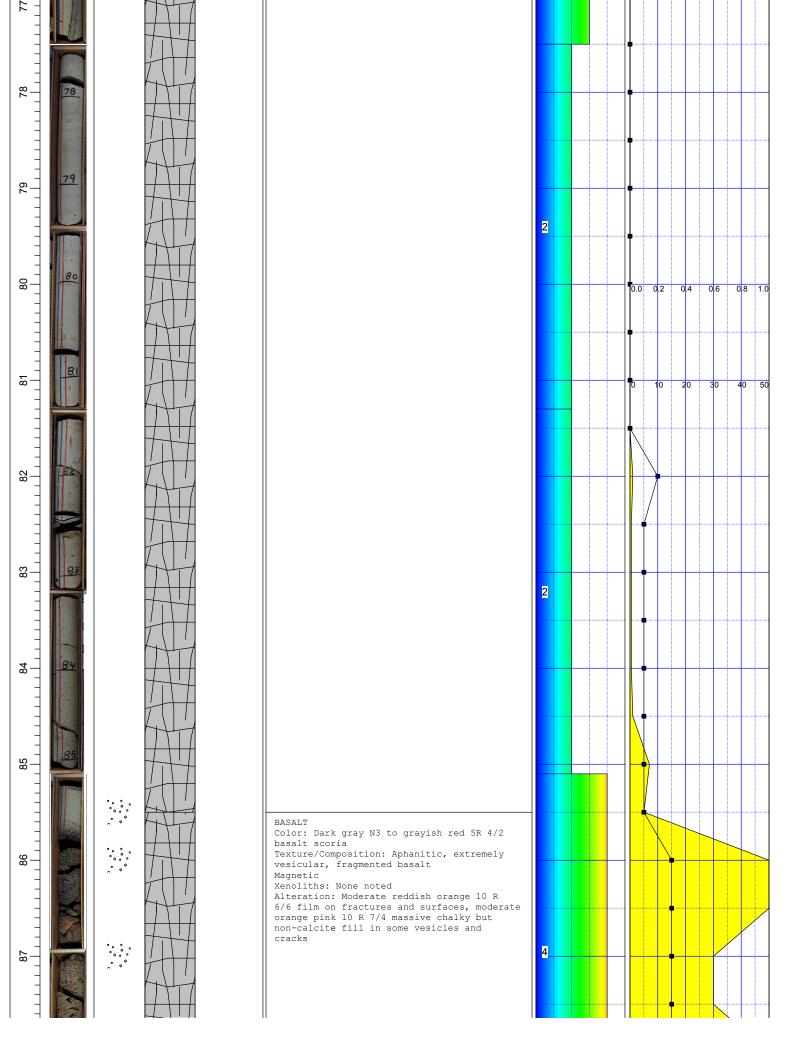


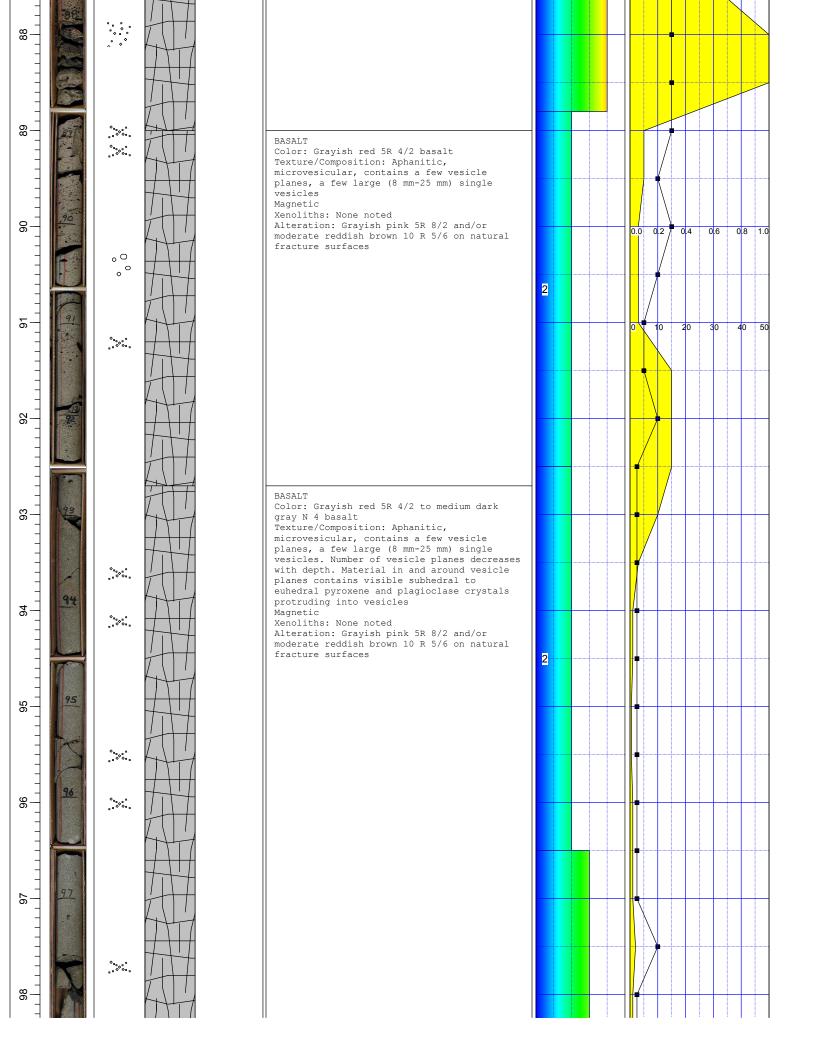


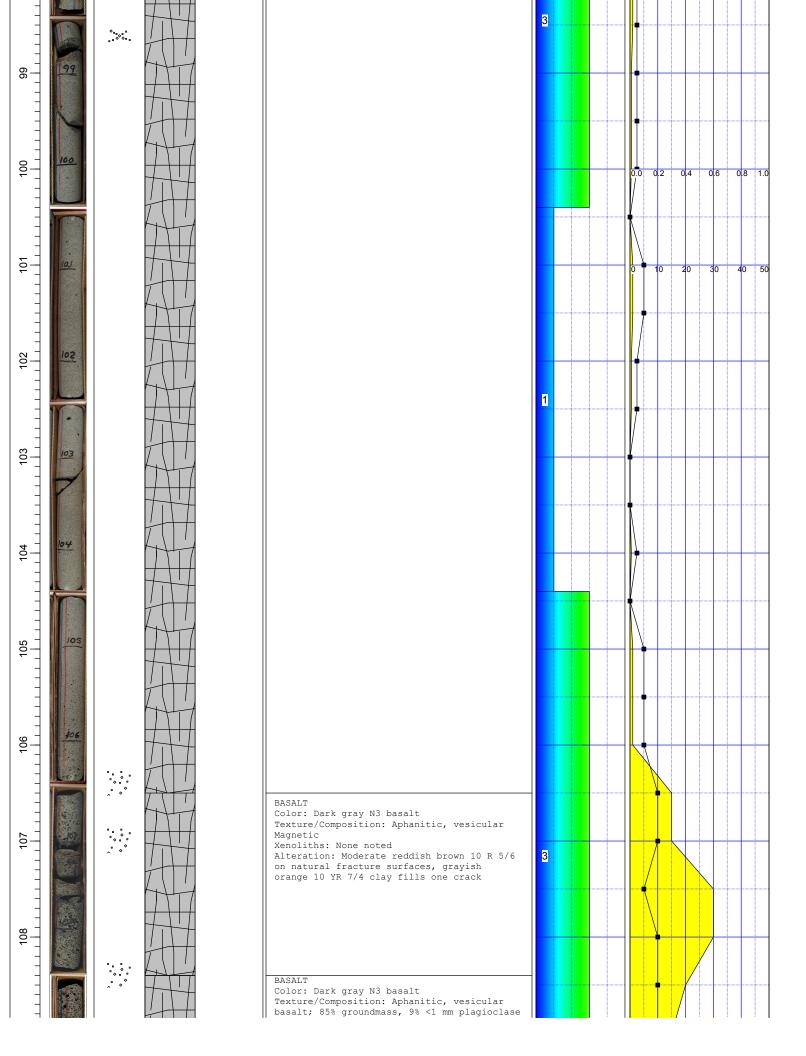




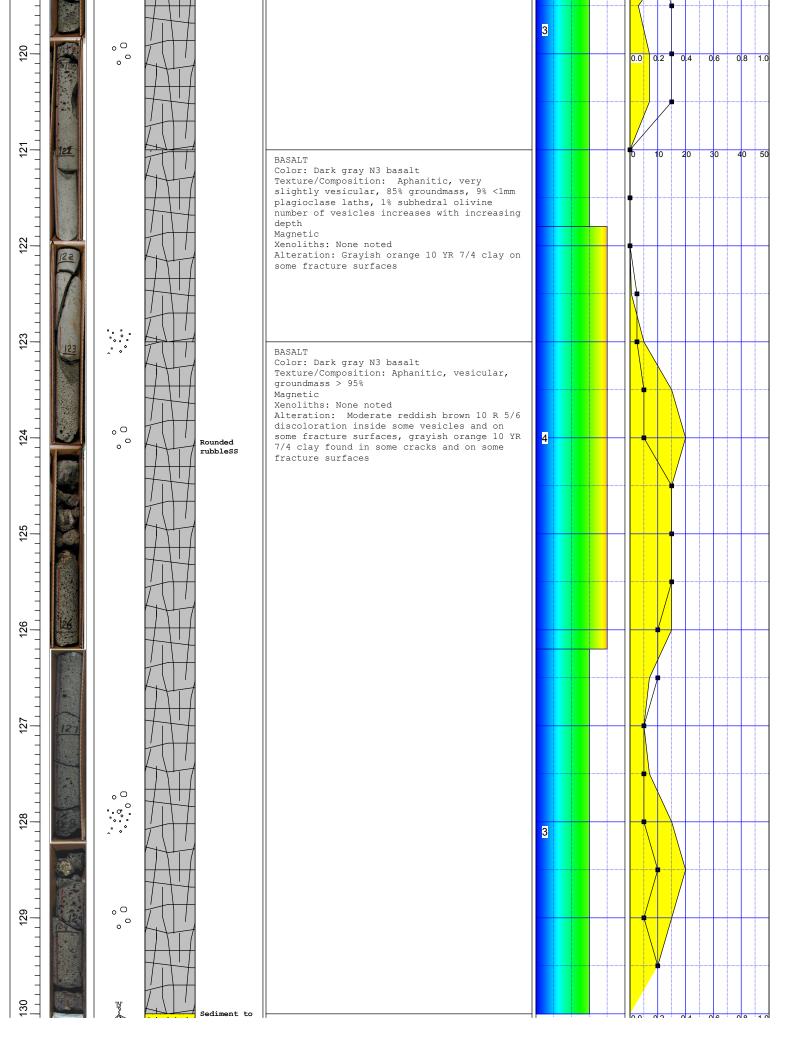


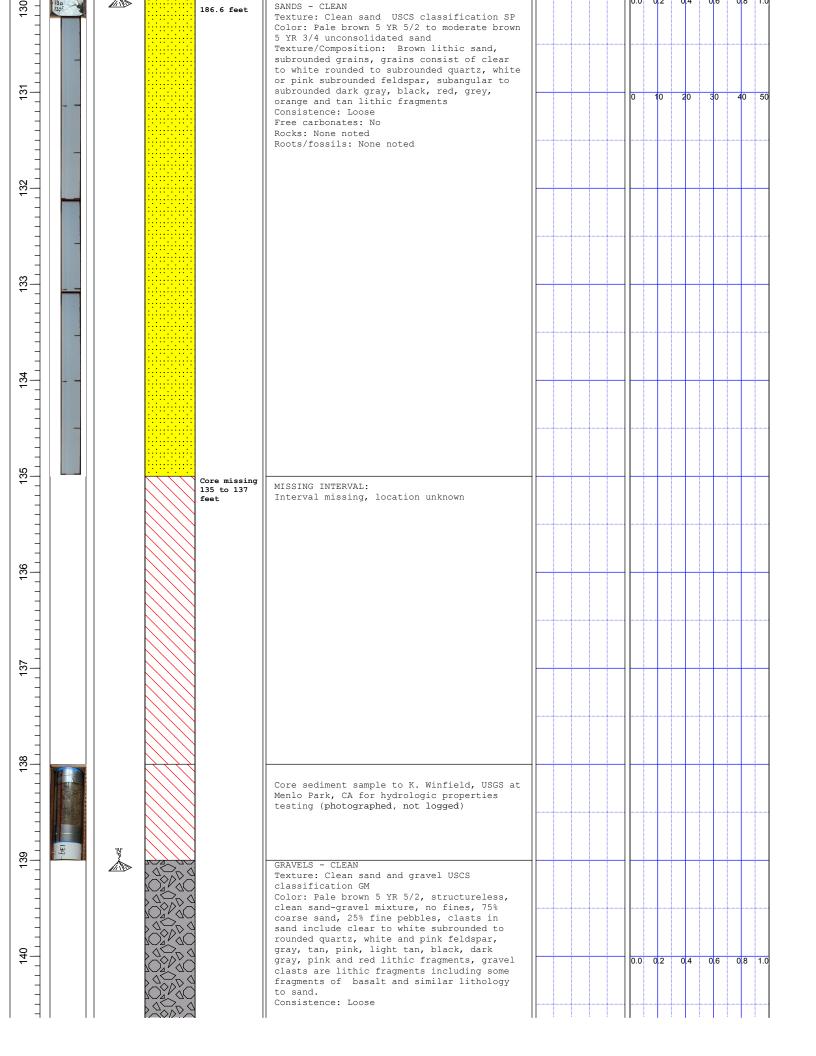






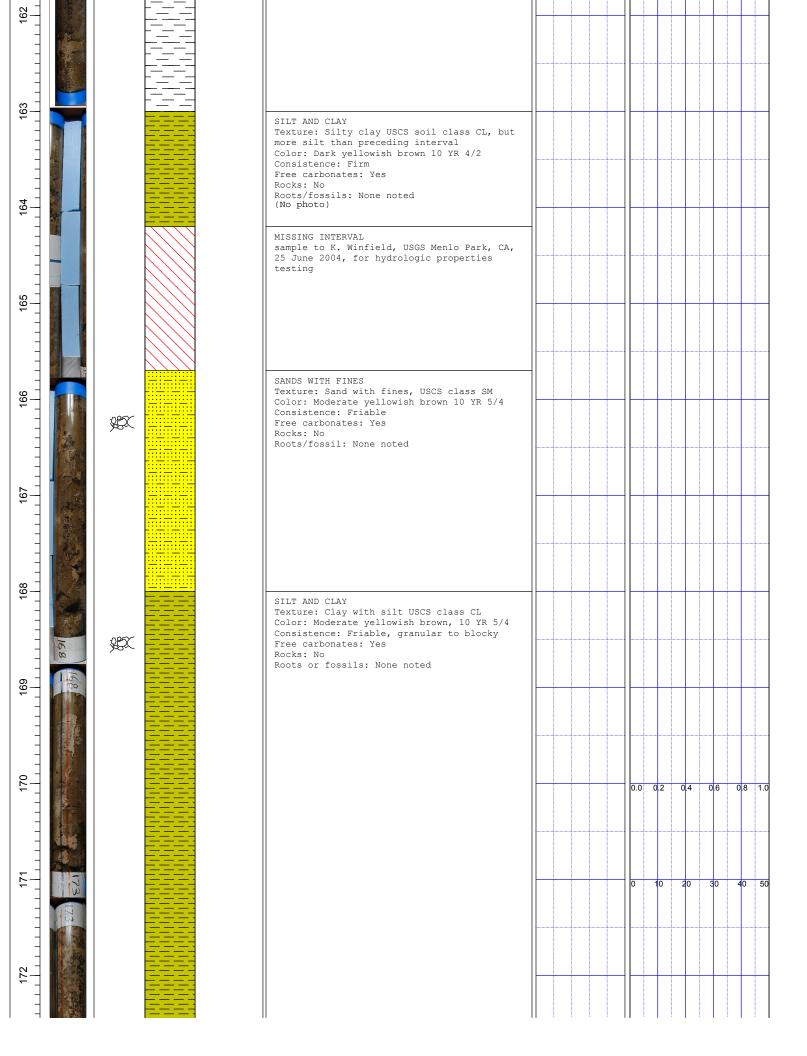
110 109 109 109 109 109 109 109 109 109	Core missing 109.9 to 111.8 feet, rubble fragments at 110 feet	laths, 1% subhedral olivine Magnetic Xenoliths: None noted Alteration: Moderate reddish brown 10 R 5/6 discoloration inside some vesicles, grayish orange 10 YR 7/4 clay fills some cracks  MISSING INTERVAL Missing interval, no more information		0.0 0,2 0,4 0,6 0,8 1.0
113 112		BASALT: Color: Dark gray N3 basalt Texture/Composition: Aphanitic, few vesicles, groundmass 95%, number and size of vesicles increases with increasing depth Magnetic Xenoliths: None noted Alteration: Grayish orange 10 YR 7/4 clay fills a few vesicles and is found on some fracture surfaces	3	
115		BASALT Color: Dark gray N3 basalt	3	
119 118 117 116 119 119 119 119 119 119 119 119 119	Fractures, allogenic clay	Texture/Composition: Aphanitic, vesicular to slightly vesicular basalt, 85% groundmass, 9% <1 mm plagioclase laths, 1% subhedral olivine, trace anhedral pyroxene Magnetic Xenoliths: None noted Alteration: Moderate reddish brown 10 R 5/6 discoloration inside some vesicles and on some fracture surfaces, grayish orange 10 YR 7/4 clay fills some cracks and vesicles		

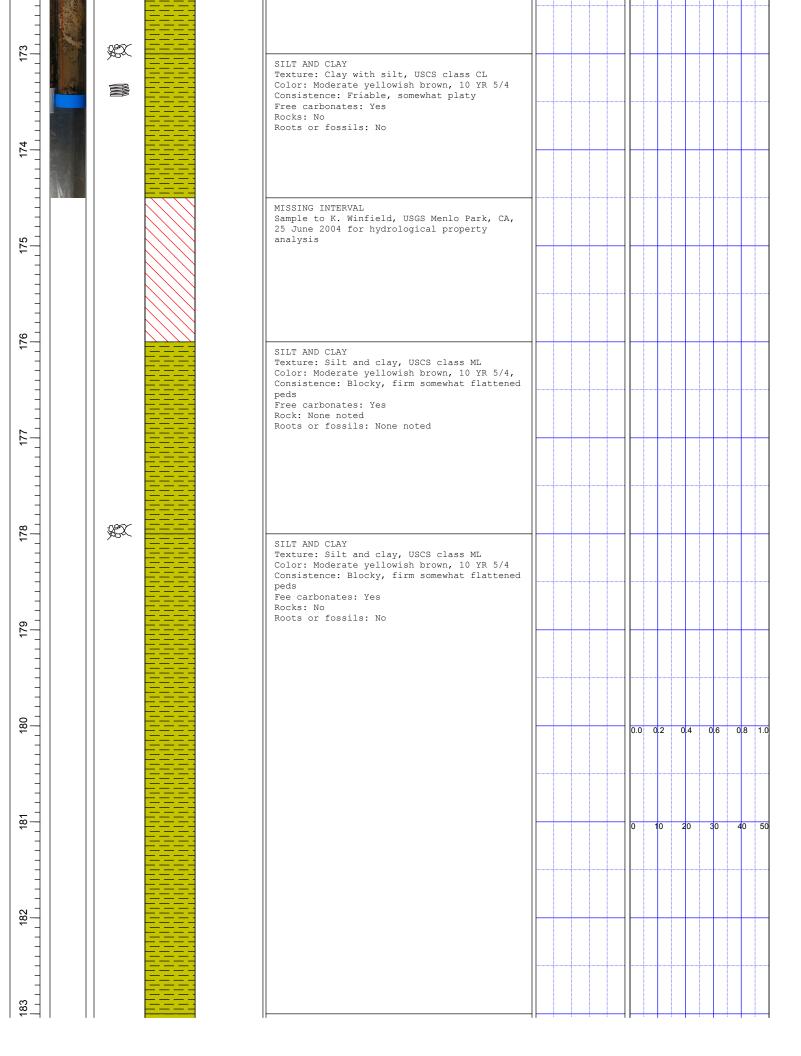


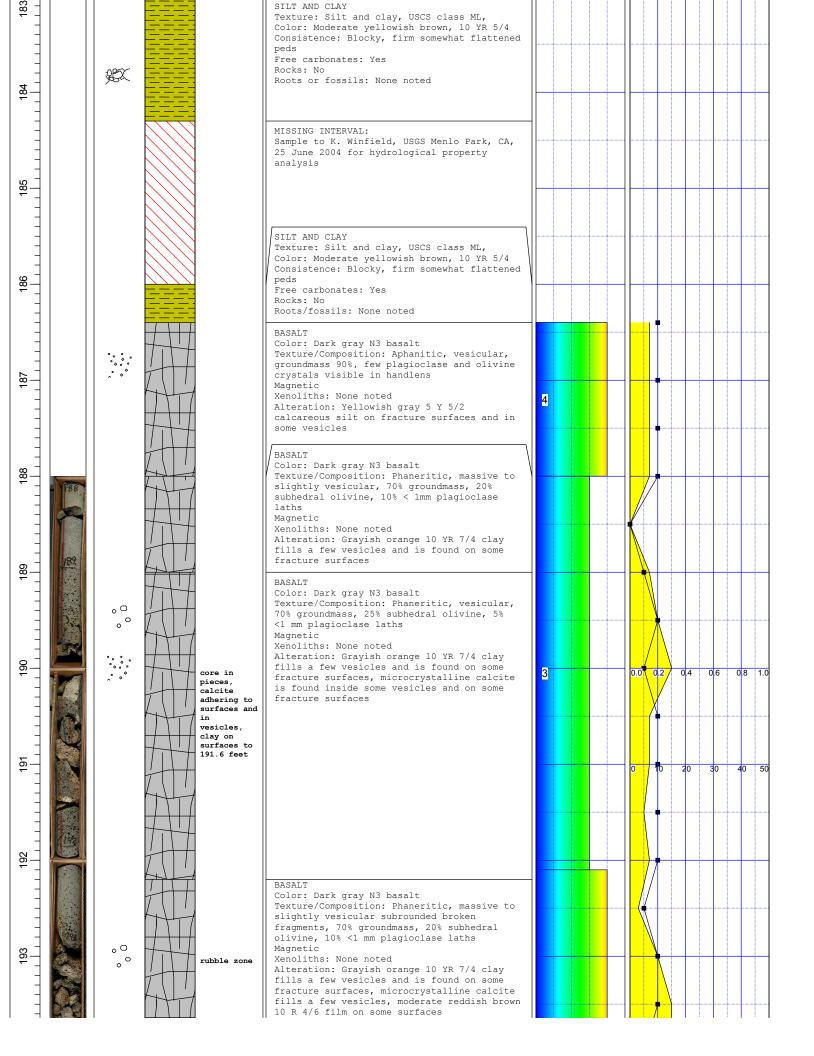


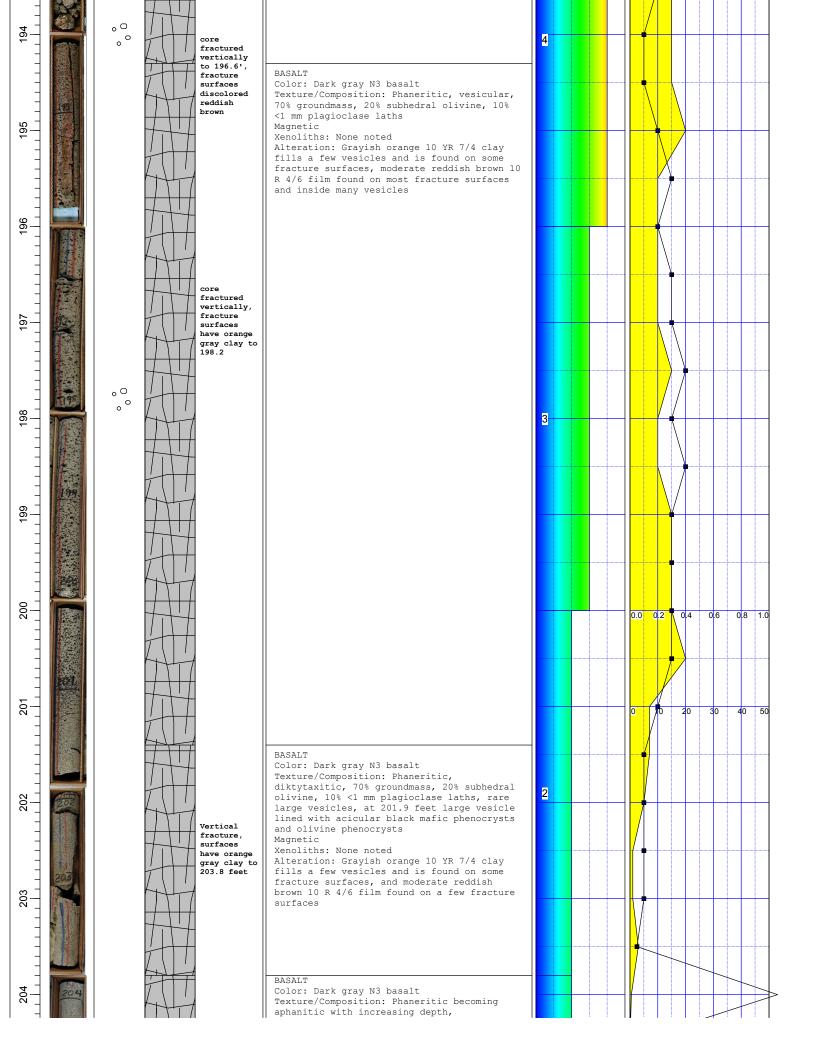
C NO 20 CO CONTROL WITH PIECE  Describer Control with Finance Order  Character Control with Endance Order  Control of 2 / 2 (describeration on reserver  Control of 2 / 2 (describeration on reserver)  Control of 2 /	141				Free carbonates: No Rocks: 25% granule to fine pebbles (no photo)	0 10	20	1 3	0 4	0 50
GRAPTIA STEP PINCS PROTECTION OF PROTECTION	\							,		, 00
GRAPTIA STEP PINCS PROTECTION OF PROTECTION	42			0 0 0 0 0 0 0 0 0 0 0 0						
Towers: Growel with Fines 18058  Constitution from basis with dark readish brown 10 8 3/4 discolaration on forcours authorized to a surface, and send enheat or crystals of white proveduction intens growing on a surface of the minest growing of the movement of the minest growing of the movement of the minest growing of the movement of the minest growing of the minest growi	-									
Towards (Groved With Finance 1865)  Control Co	3		19							
brown 10 8 3/4 discoloration on Procurse purposes, and small embedial crystals of contractions and small embedial crystals of contractions are S vm s/2 pole brown clay and site Consistence Income, structure-beas Large Free carbonates No Rocker Small to medium fine cubbles of Rocker Small to medium fine cubble of Rocke	- - - 4 - -				Texture: Gravel with fines USCS Classification GC					
manals fragments with sand and fines, some root fragments Here tarbonates have root fragments. Here tarbonates have been bonath.  Here tarbonates and the first complete of the same distinctor recognizable work only root limites, some 1 mm tubules, one 5 mm dismeter recognizable worky root limites, no phete)  CLAY  CL					brown 10 R 3/4 discoloration on fracture surfaces, and small euhedral crystals of white non-calcite mineral growing on surfaces Fines are 5 YR 5/2 pale brown clay					
Rocks: Small to medium fine cobbles of vesicular beast!  Noots: Tossils: Some 1 mm tubules, one 5 mm decided to the common of th	144				Consistence: Loose, structureless Large basalt fragments with sand and fines, some root fragments					
CLAY TEXTURE: Silt and Clay USCS classification CL. Color: Light brown 5 YR 6/4 somewhat friable, blocky clay soil with 10% coarse sand Consistence: Free carbonates: No Recta/fossila: No  MISSING INTERVAL Sample to X. Winfield, USGS Menlo Park, CA, 23 June 2004, for hydrologic properties teating  CLAY Texture: Silt and clay, blocky, USCS central clay soil COLOR Moderate yellowish brown 10 YR 5/4 silt and clay soil Consistence: Firm, blocky peds Free carbonates: Wes Rocks: No Roots or fossils: None noted					Rocks: Small to medium fine cobbles of vesicular basalt Roots: fossils: Some 1 mm tubules, one 5 mm diameter recognizable woody root					
Triable, blocky clay soil with 10% coarse sand Consistence:  Free carbonates: No Rooks: No Roots or fossils: None noted	145	145			CLAY Texture: Silt and Clay USCS classification CL					
Rocks: No Roots/fossils: No  MISSING INTERVAL Sample to K. Winfield, USGS Menlo Park, CA, 25 June 2004, for hydrologic properties testing  CLAY Texture: Silt and clay, blocky, USCS classification CL Color: Moderate yellowish brown 10 YR 5/4 silt and clay soil Consistencer Firm, blocky peds Free carbonates: Yes Rocks: No Roots of fossils: None noted					friable, blocky clay soil with 10% coarse sand Consistence:					
Sample to K. Winfield, USGS Menlo Park, CA, 25 June 2004, for hydrologic properties testing  CLAY Texture: Silt and clay, blocky, USCS classification CL Color: Moderate yellowish brown 10 YR 5/4 silt and clay soil Consistence: Firm, blocky peds Free carbonates: Yes Rocks: No Roots or fossils: None noted	146				Rocks: No					
Sample to K. Winfield, USGS Menlo Park, CA, 25 June 2004, for hydrologic properties testing  CLAY Texture: Silt and clay, blocky, USCS classification CL Color: Moderate yellowish brown 10 YR 5/4 silt and clay soil Consistence: Firm, blocky peds Free carbonates: Yes Rocks: No Roots or fossils: None noted  00 02 04 06 0.8 1.0										
CLAY Texture: Silt and clay, blocky, USCS classification CL Color: Moderate yellowish brown 10 YR 5/4 silt and clay soil Consistence: Firm, blocky peds Free carbonates: Yes Rocks: No Roots or fossils: None noted  0.0 02 04 0.6 0.8 1.0	147				Sample to K. Winfield, USGS Menlo Park, CA,					
CLAY Texture: Silt and clay, blocky, USCS classification CL Color: Moderate yellowish brown 10 YR 5/4 silt and clay soil Consistence: Firm, blocky peds Free carbonates: Yes Rocks: No Roots or fossils: None noted  00 02 04 06 08 10										
Color: Moderate yellowish brown 10 YR 5/4 silt and clay soil Consistence: Firm, blocky peds Free carbonates: Yes Rocks: No Roots or fossils: None noted  0.0 0.2 0.4 0.6 0.8 1.0	148	17 CO			Texture: Silt and clay, blocky, USCS					
Roots or fossils: None noted					Color: Moderate yellowish brown 10 YR 5/4 silt and clay soil Consistence: Firm, blocky peds Free carbonates: Yes					
	149									
	150					0.0 0.2	2 0.4	4 0	.6 0.	8 1.0
	151	**				0 10	20	) 3	0 4	J 50

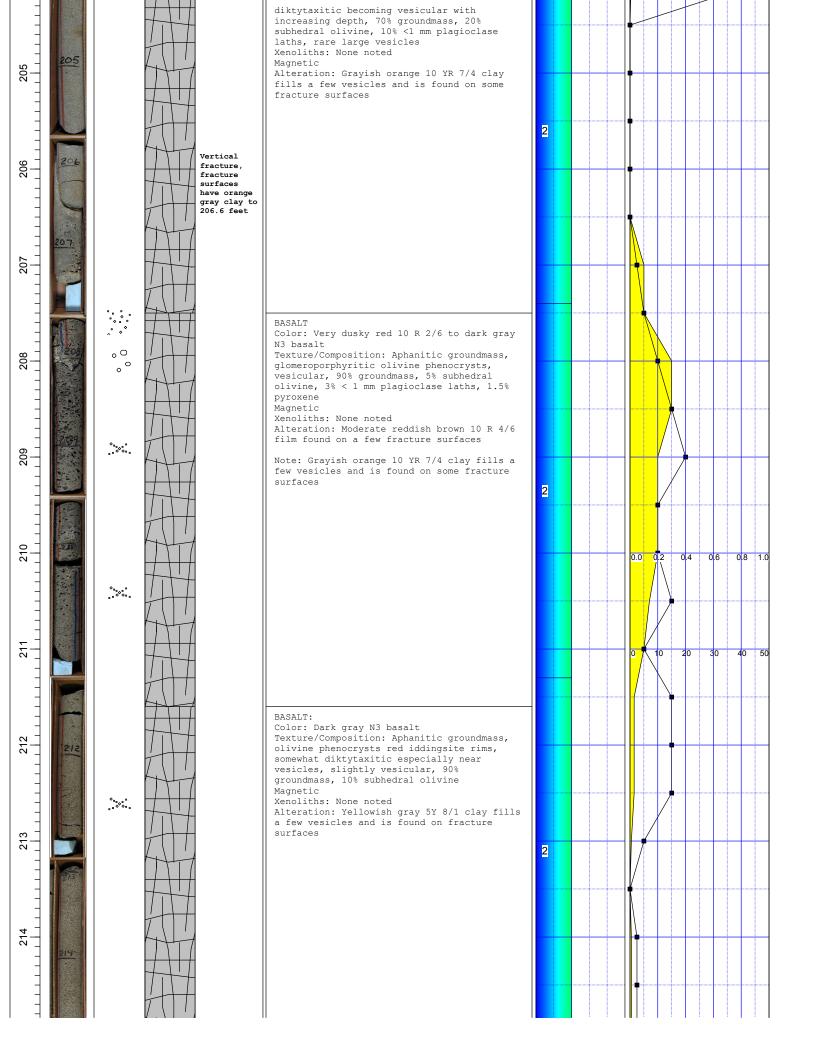
-															
2	全														
152															
-	T														
153	53														
· -				SANDS WITH FINES Texture: Sands with fines, USCS classification SC Color: Moderate yellowish brown 10 YR 5/4											
- - - -				Consistence: Firm, blocky peds Free carbonates at 153 feet, no free carbonates at 155 feet											
154				Rocks: Rare 1 cm pebbles Roots/fossils: None noted (No photo)											
-															
155															
5			Core missing 155 to 158 feet	MISSING INTERVAL Missing interval, no more information											
- - -															
156														+	
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157															
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158															
-				MISSING INTERVAL Sample to K. Winfield, USGS Menlo Park, CA, 25 June 2004, for hydrologic properties testing											
- - - -															
159															
-				CLAY											
160				Texture: Clay USCS soil class CH, Color: Dark yellowish brown 10 YR 4/2, Consistence: Firm, massive, firm											
- 4	(6)(6)			Free carbonates: Yes Rocks: No Roots/fossils: None noted				0.0	0 0	2 (	0.4	0.6	6	0.8	1.0
					1										
161	163							0	1	0	20	30	)	40	50
	163														
	6														

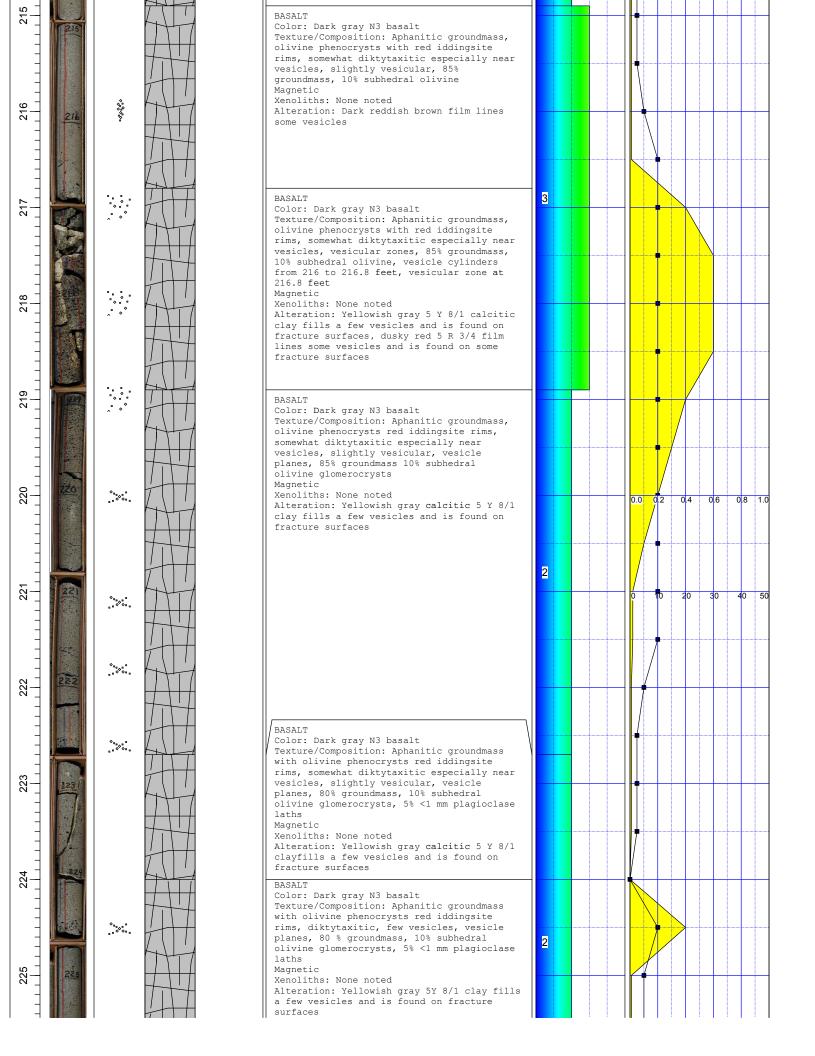


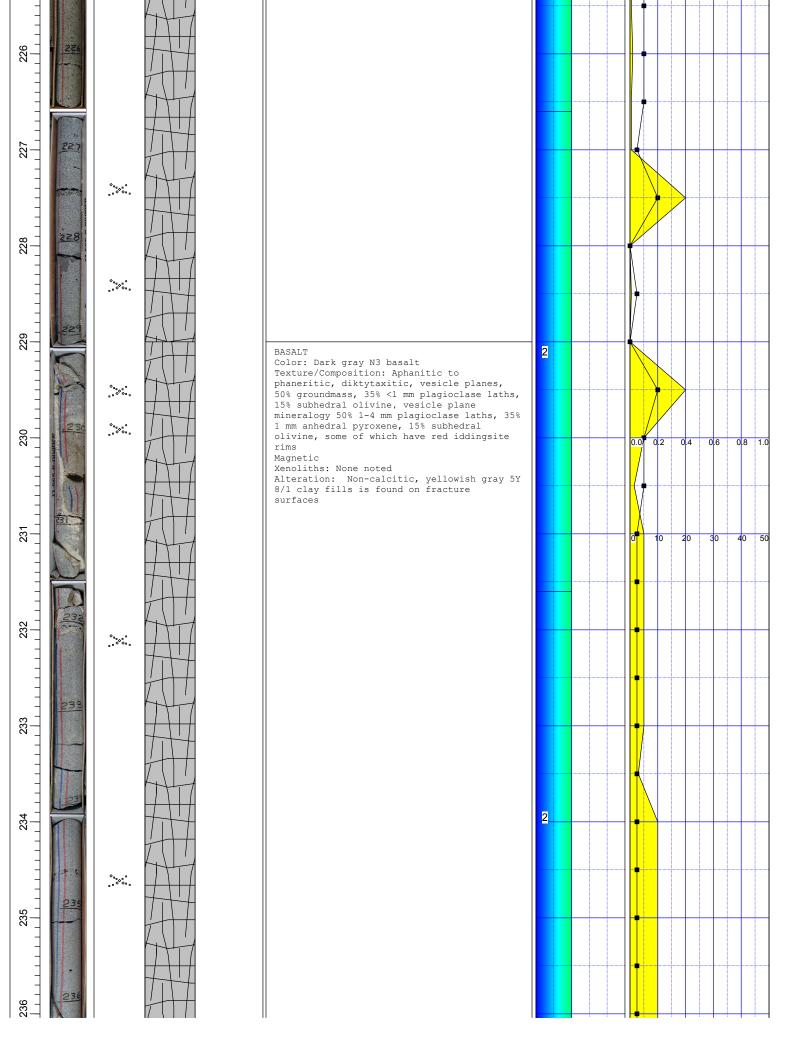


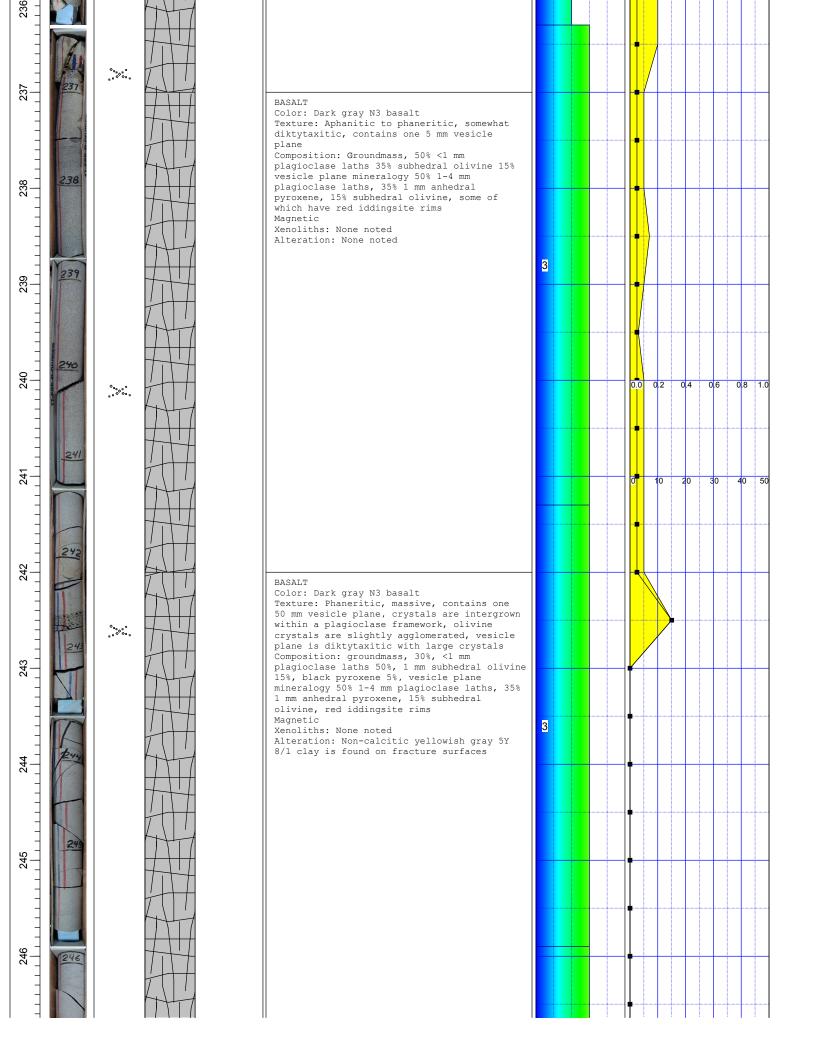


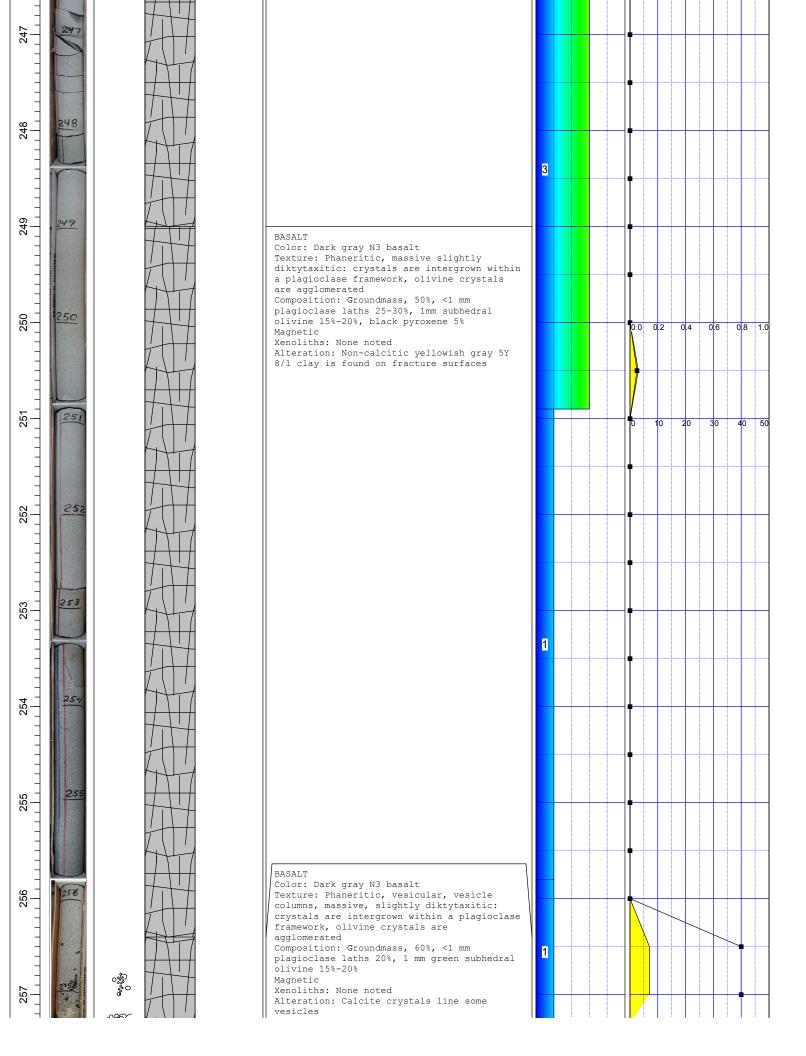


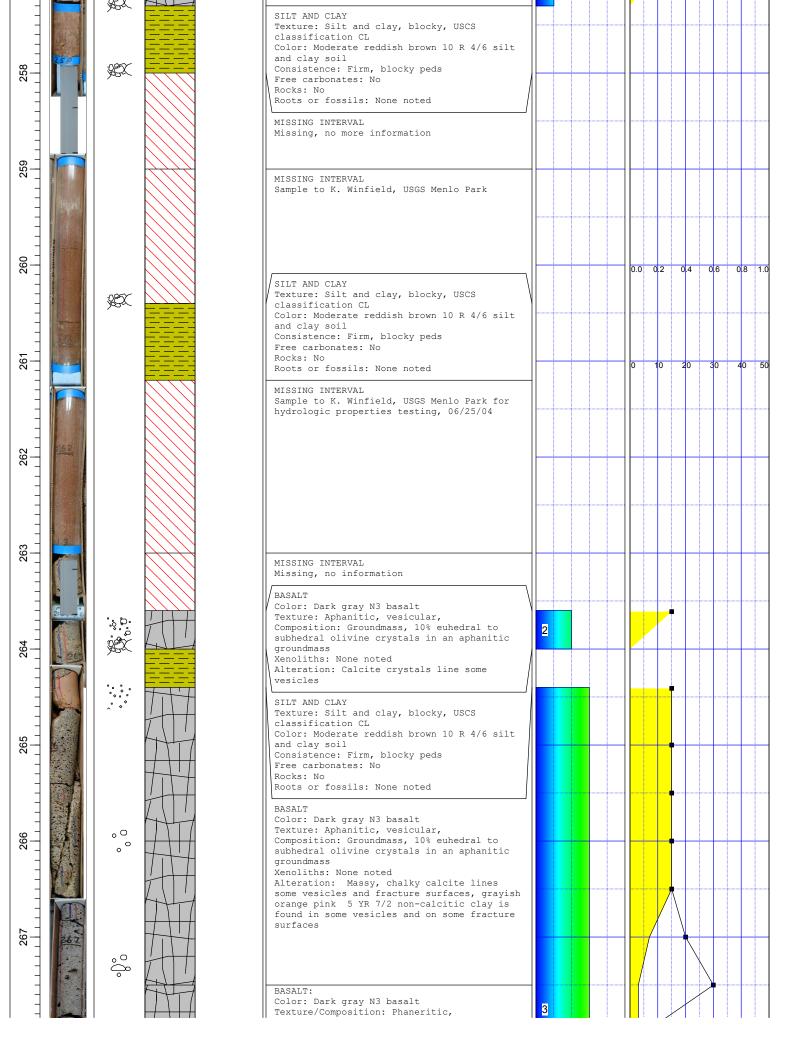


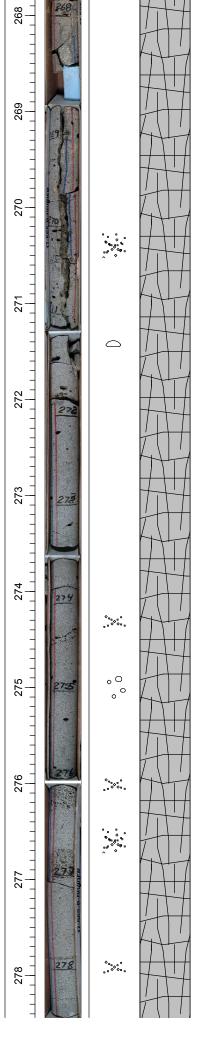




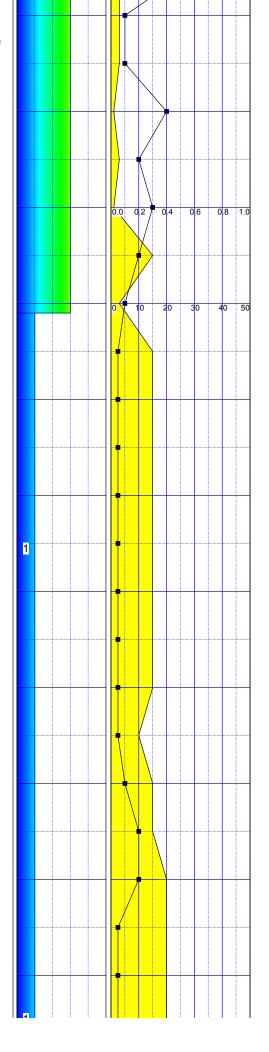


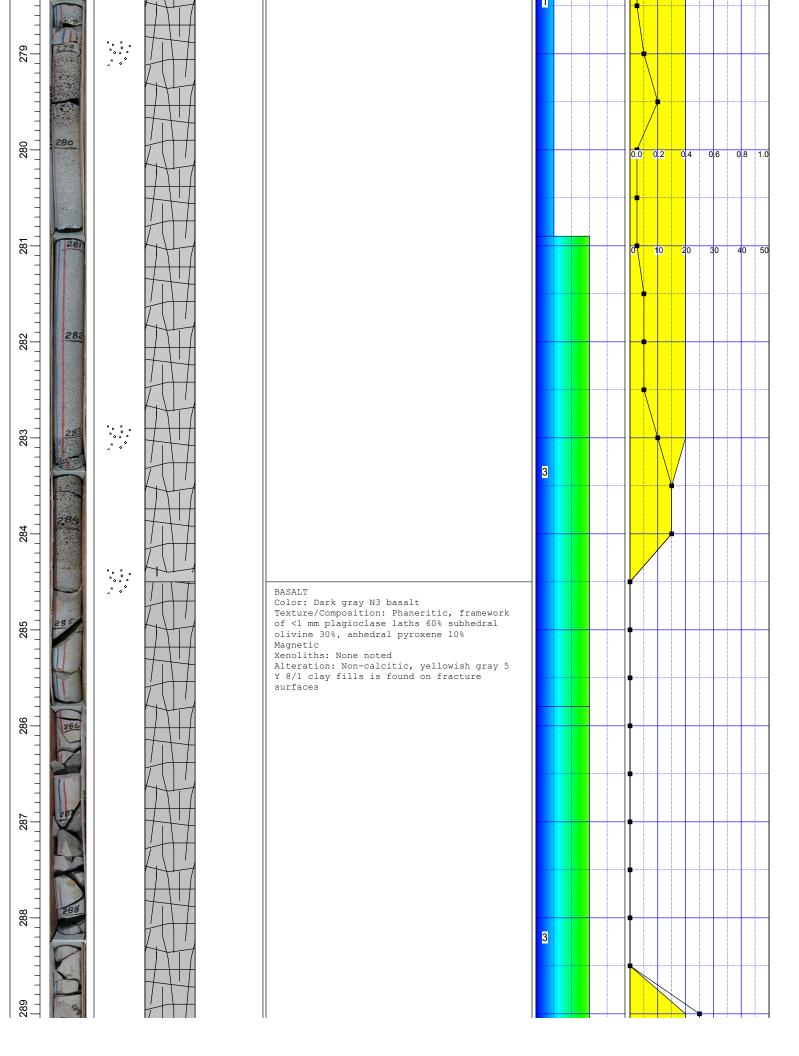


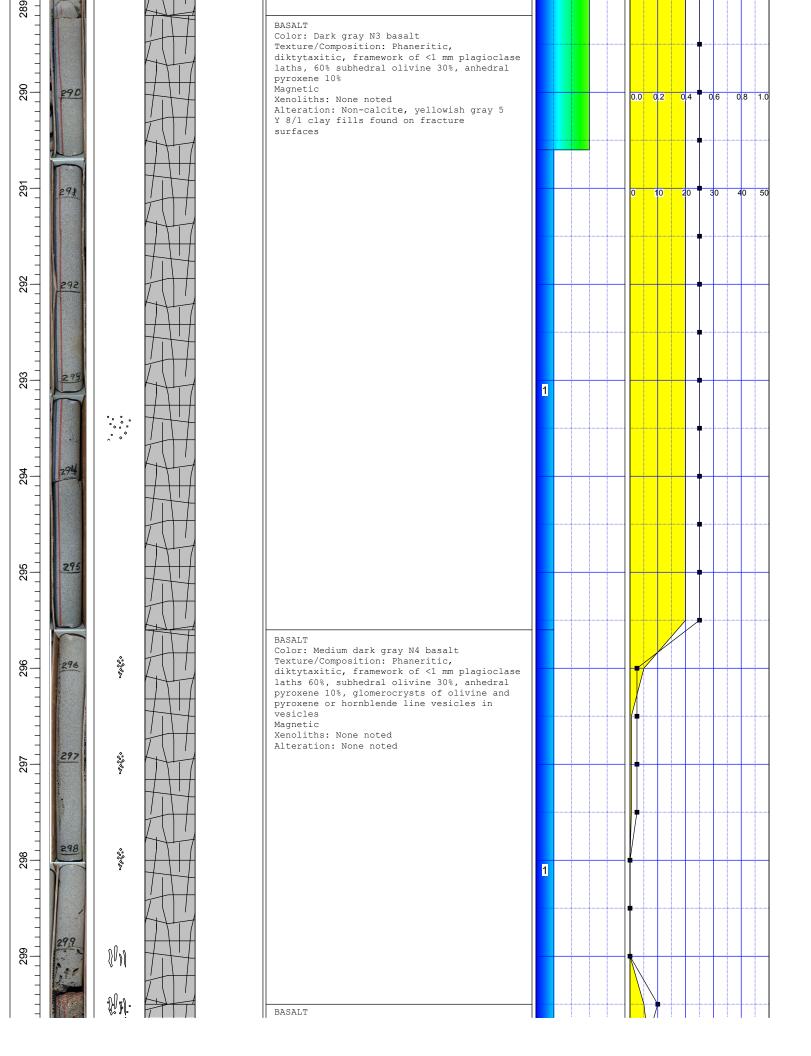


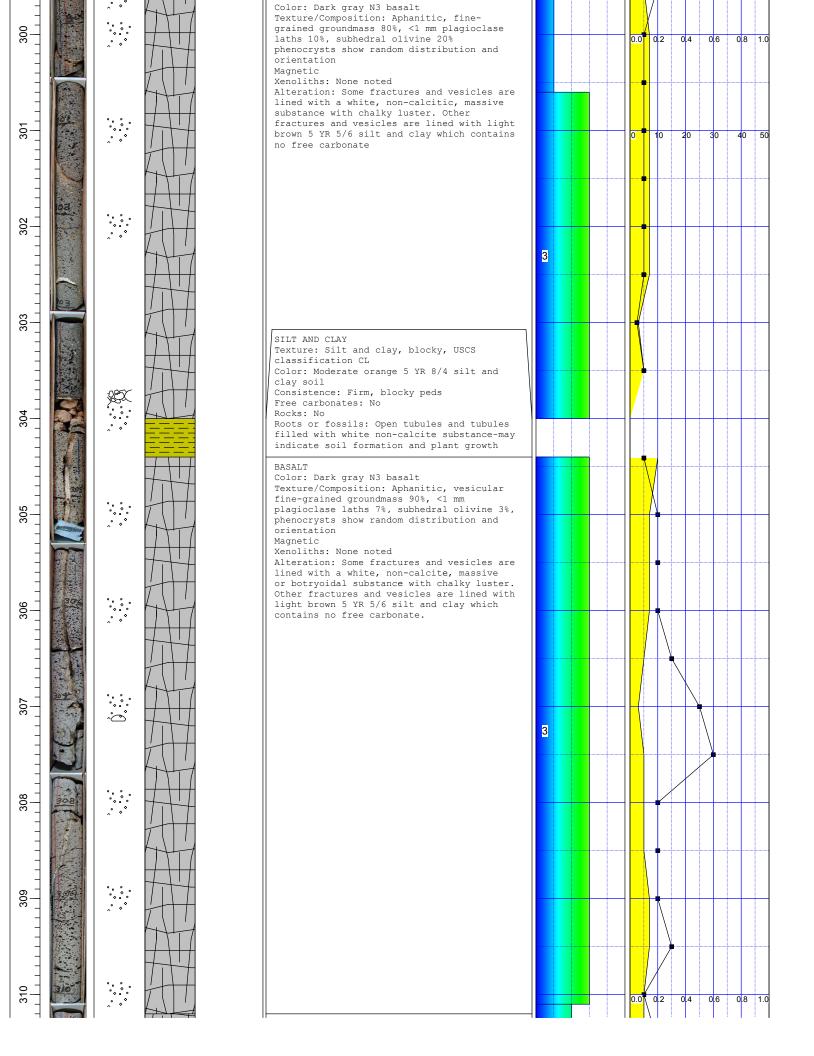


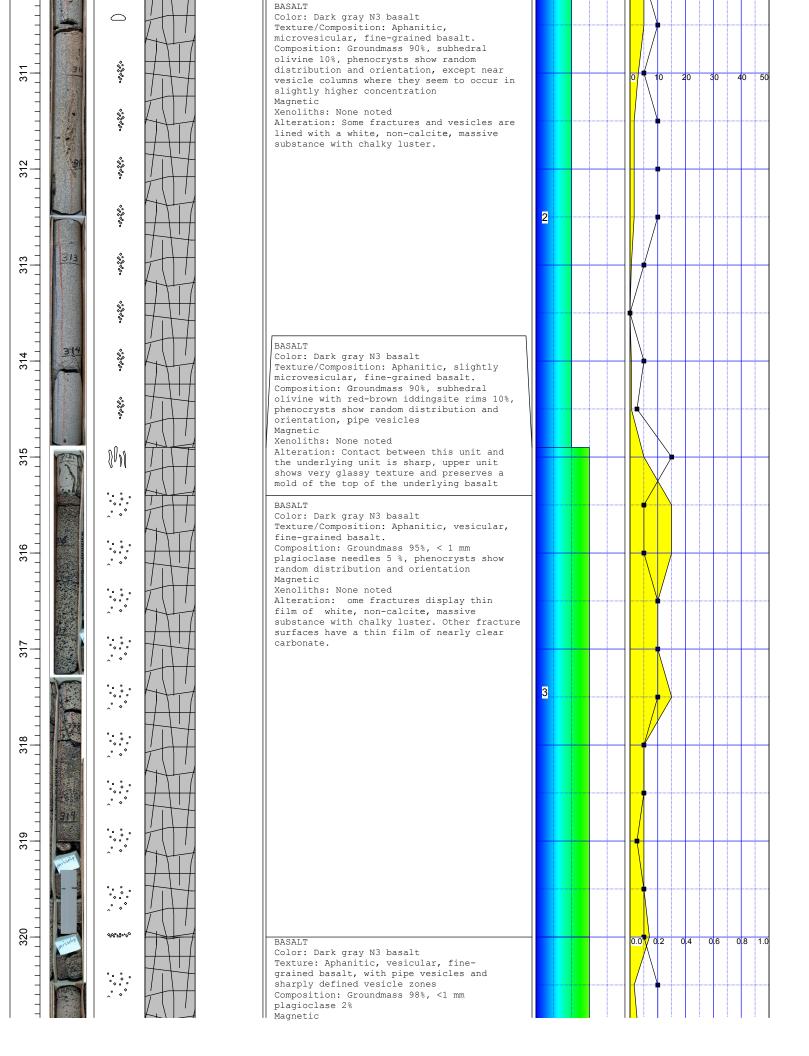
diktytaxitic, vesicle planes, groundmass, 50% <1 mm plagioclase laths 35% subhedral olivine 15%, vesicle plane mineralogy Phaneritic 50% 1-4 mm plagioclase laths, 35% 1 mm anhedral pyroxene, 15% subhedral olivine, with red brown alteration rims Magnetic Xenoliths: None noted Alteration: Non-calcitic, yellowish gray 5Y 8/1 clay fills is found on fracture surfaces

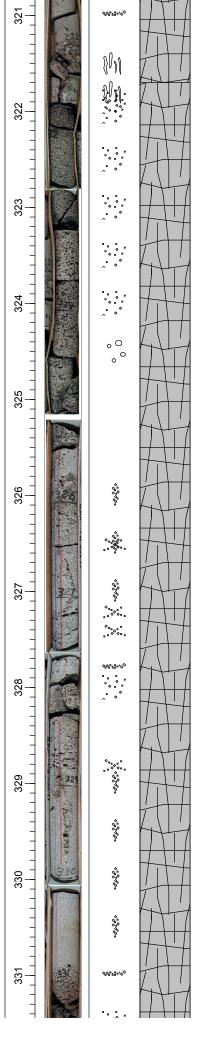












Xenoliths: None noted Alteration: Some fracture surfaces have white chalky-looking, non-calcite film. Others have medium reddish-brown film.

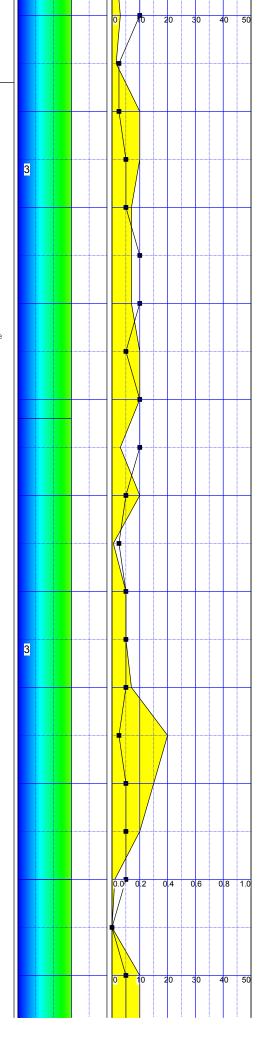
BASALT:

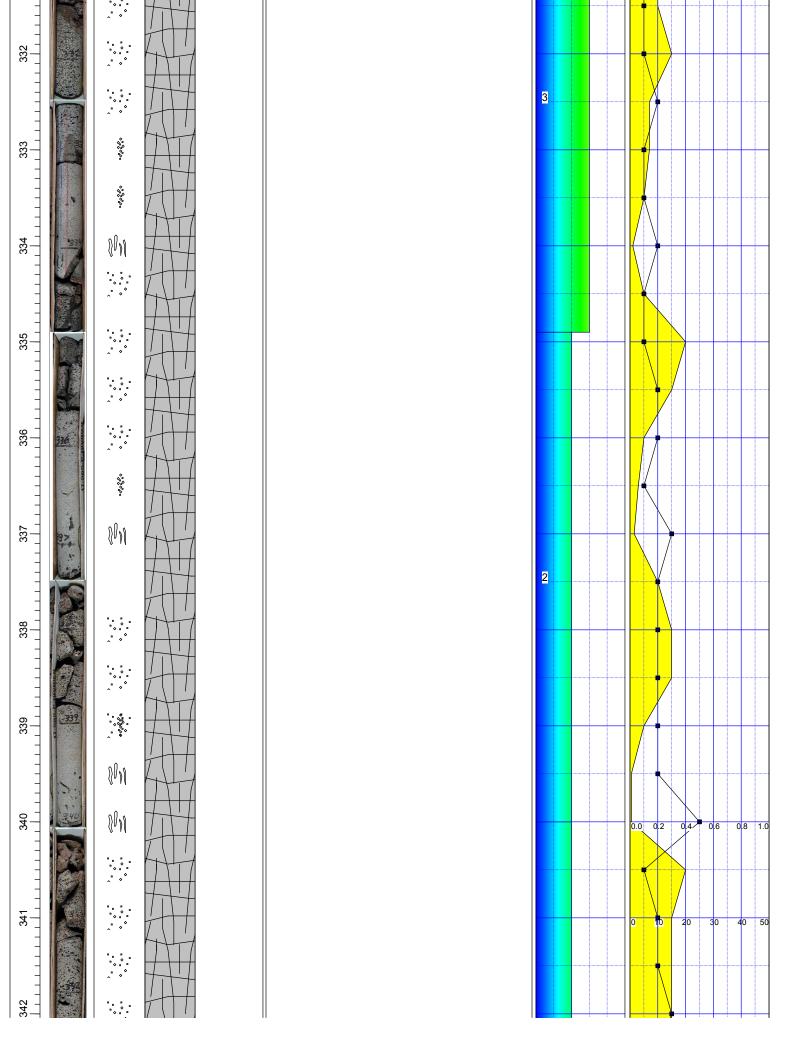
Color: Dark gray N3 basalt
Texture/Composition: Aphanitic,
microvesicular and vesicular, fine-grained
basalt. with, from base to top, the
following repeated cycle of structures: 1.
a thin, reddish brown, glassy -textured,
highly vesicular zone, 2. a zone of massive
textured basalt with pipe vesicles, 3. a
zone of microvesicular basalt with vesicle
columns and planes, 4. a zone of vesicular
basalt. This unit contains 12 of these
sequences.

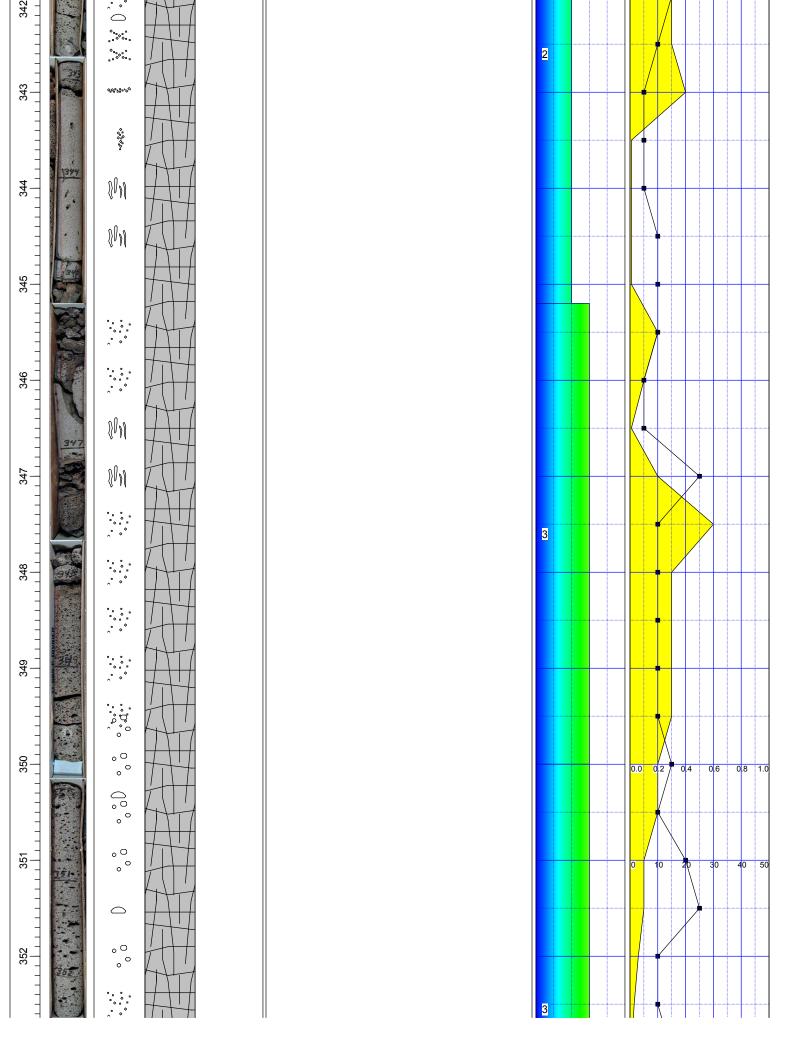
Composition: Groundmass 95%, < 1 mm plagioclase needles, 2% subhedral olivine with red to red-brown rims 2%, phenocrysts show random distribution and orientation Magnetic

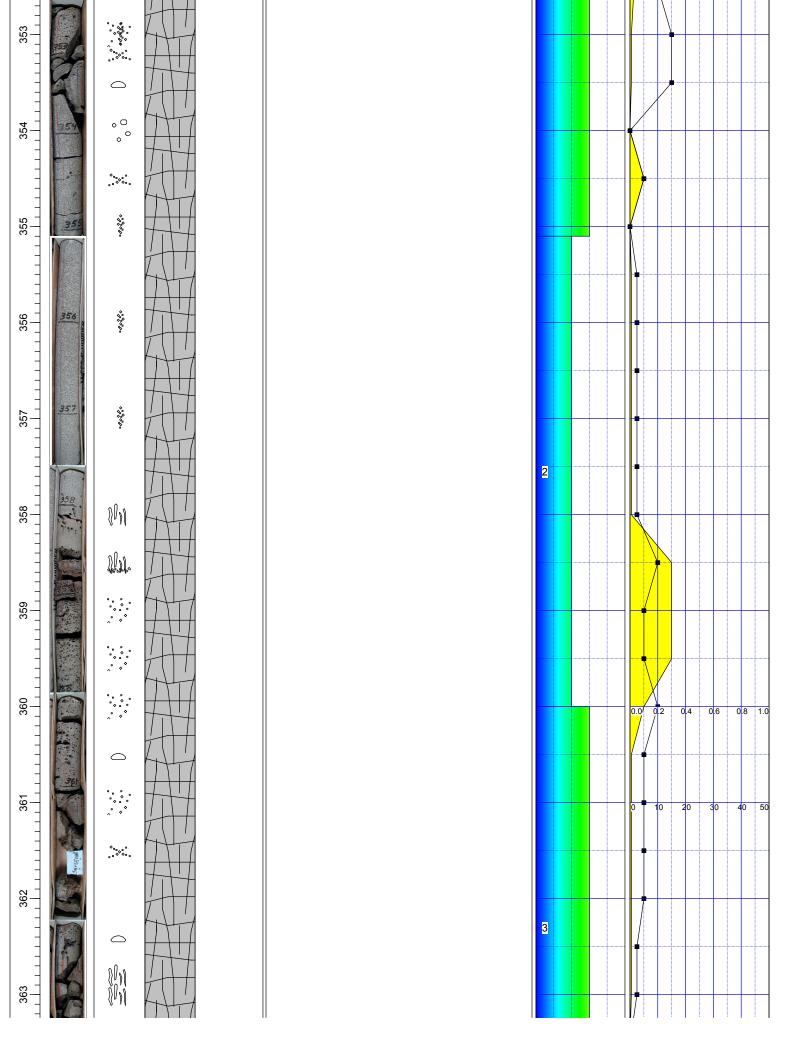
Xenoliths: None noted

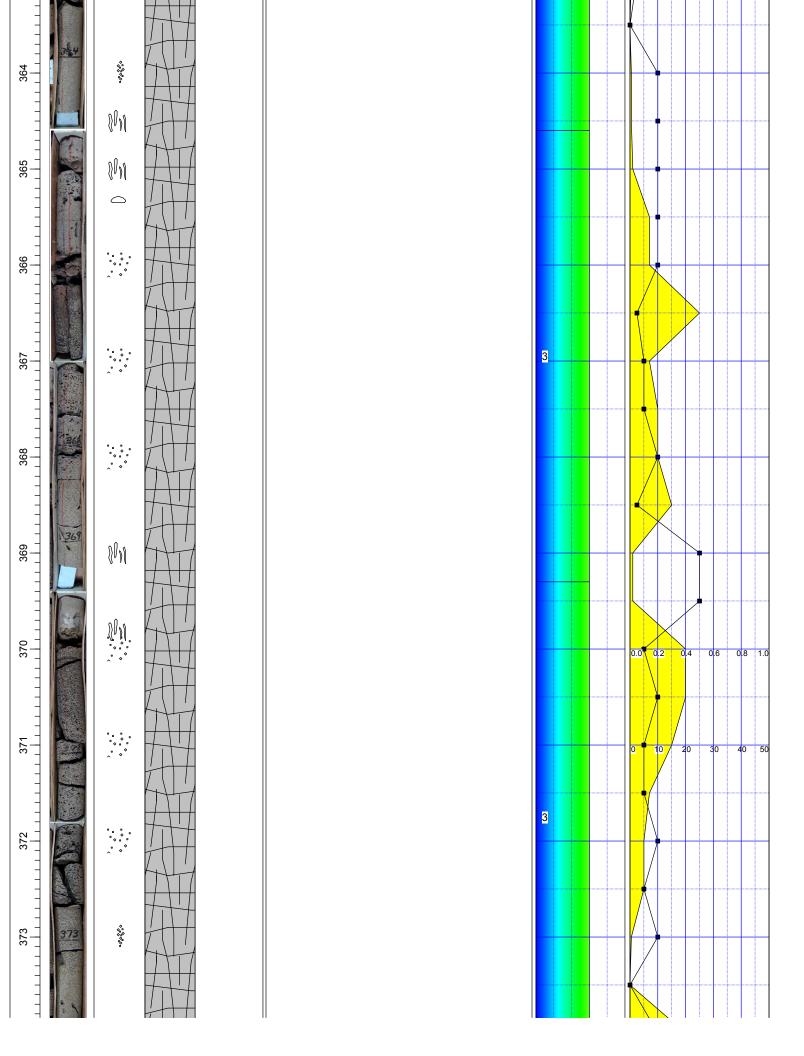
Alteration: Some fracture surfaces have a film of white, non-calcitic, massive substance with chalky luster. At base of each pipe vesicle zone, there are highly vesicular zones that preserve a molds of the surface of the underlying unit. Pipe vesicle to vesicular zones show evidence of chilling (glassy texture) and are reddish brown in color.

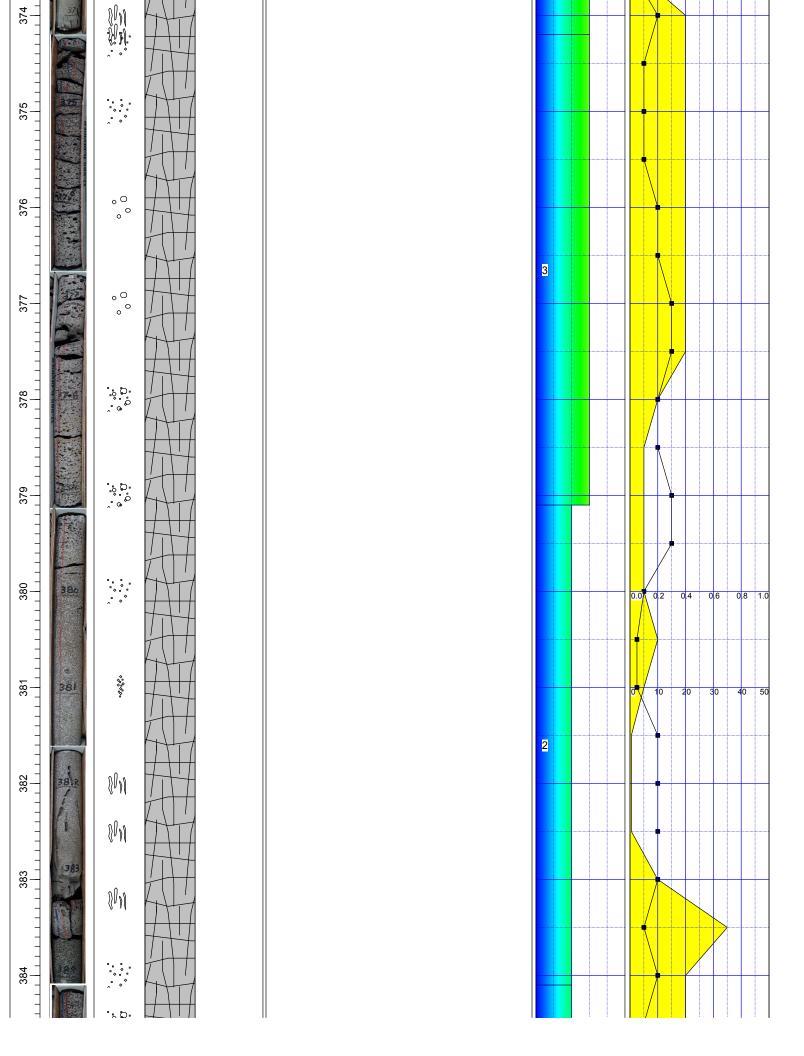


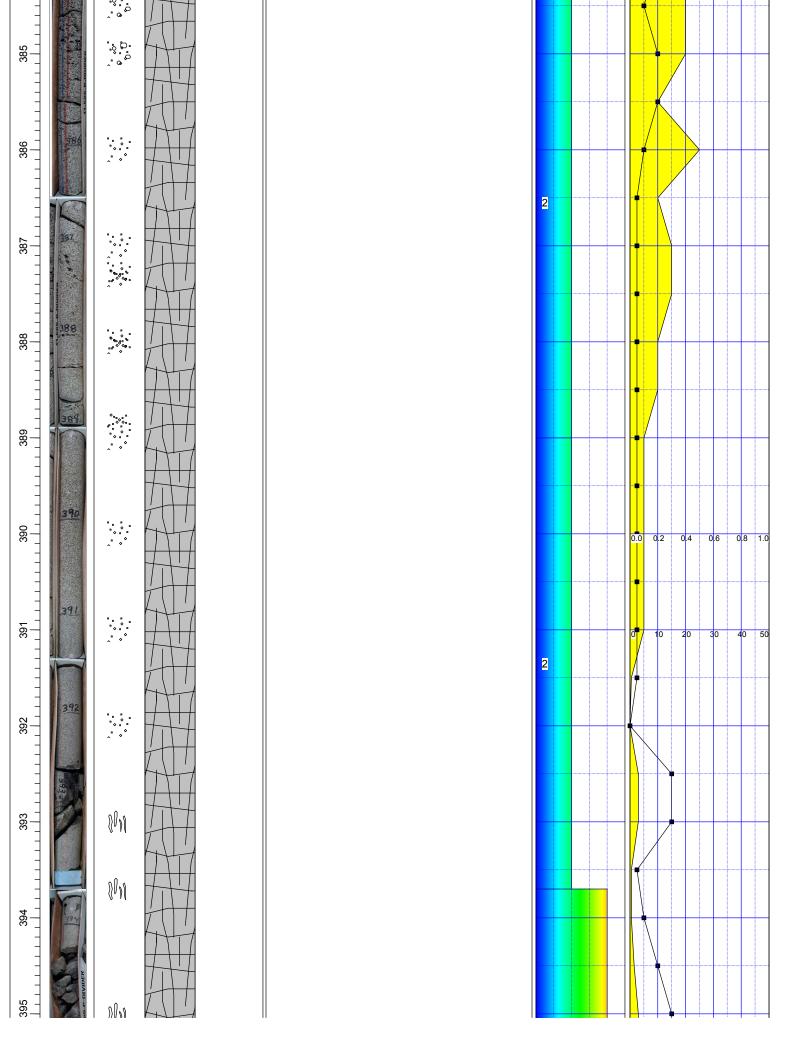


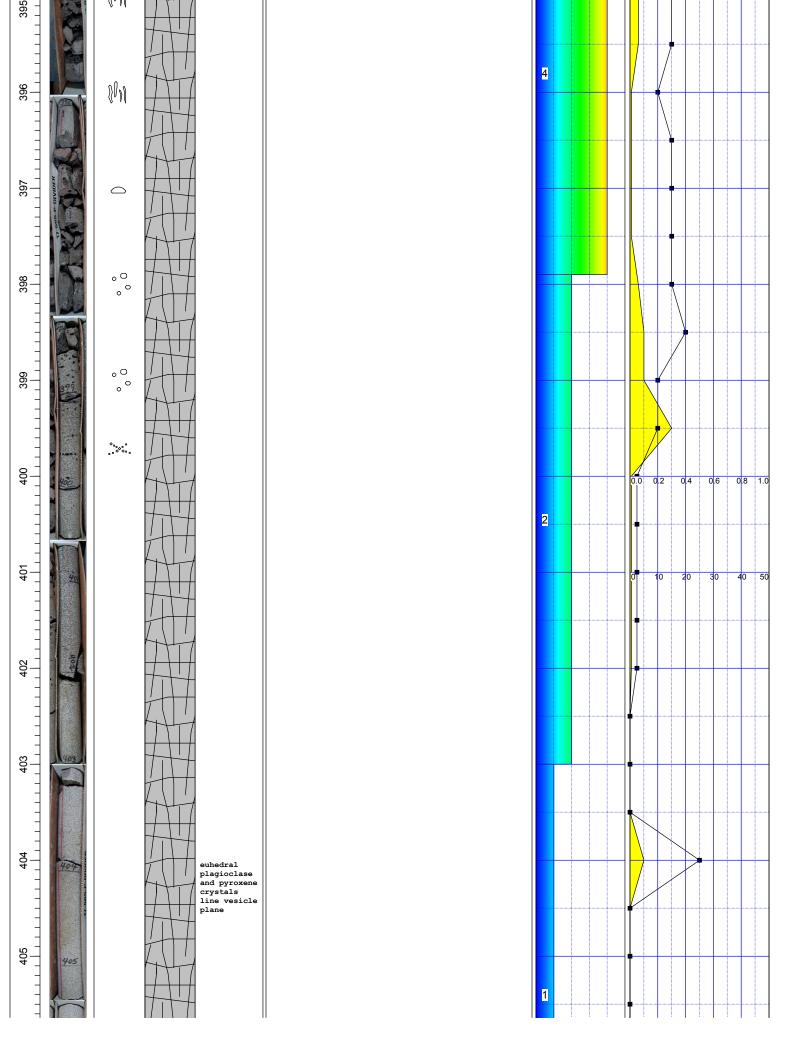


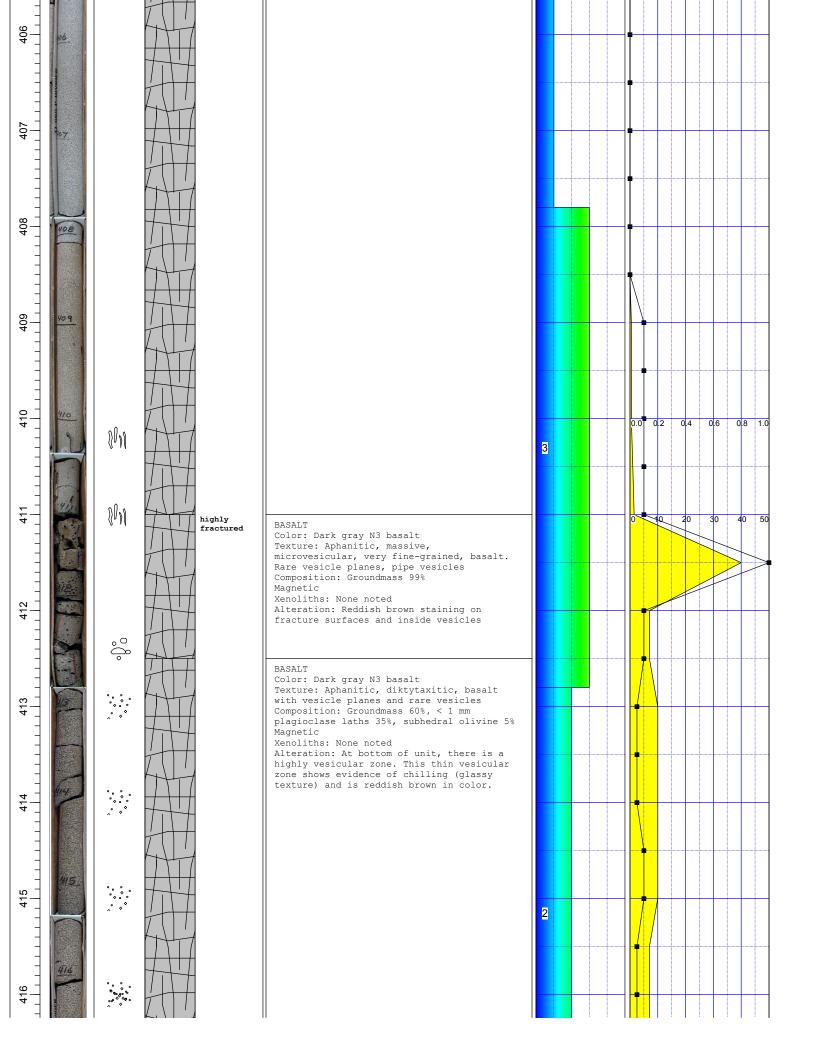


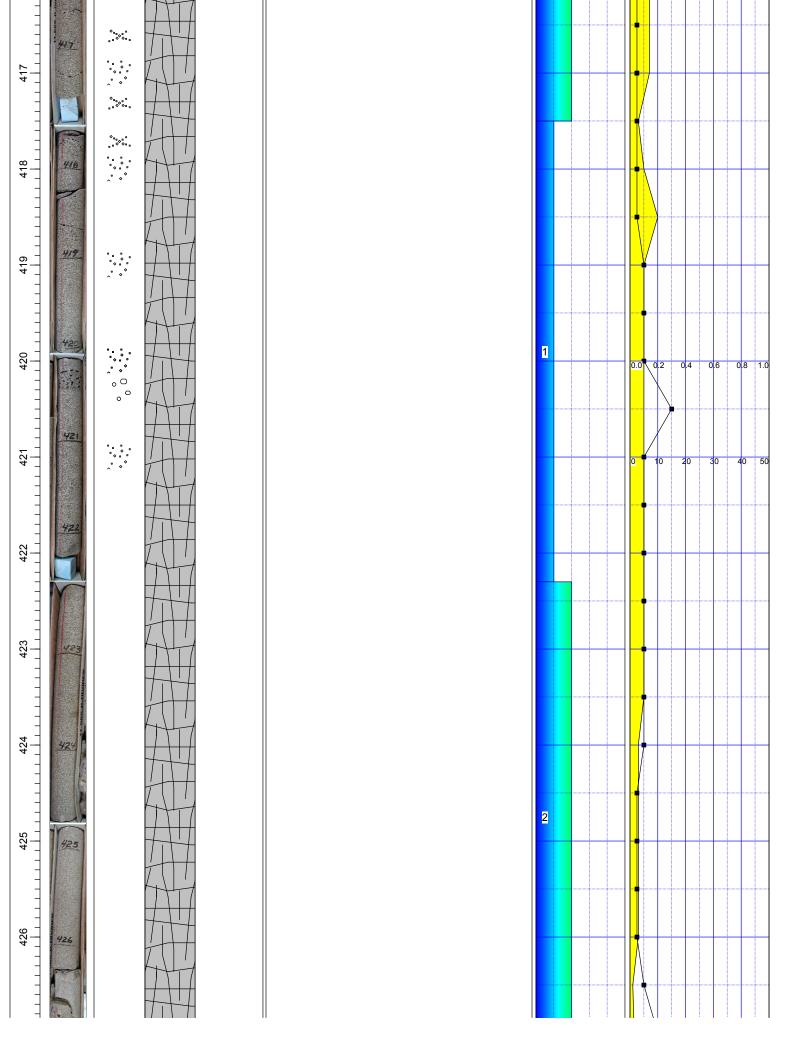


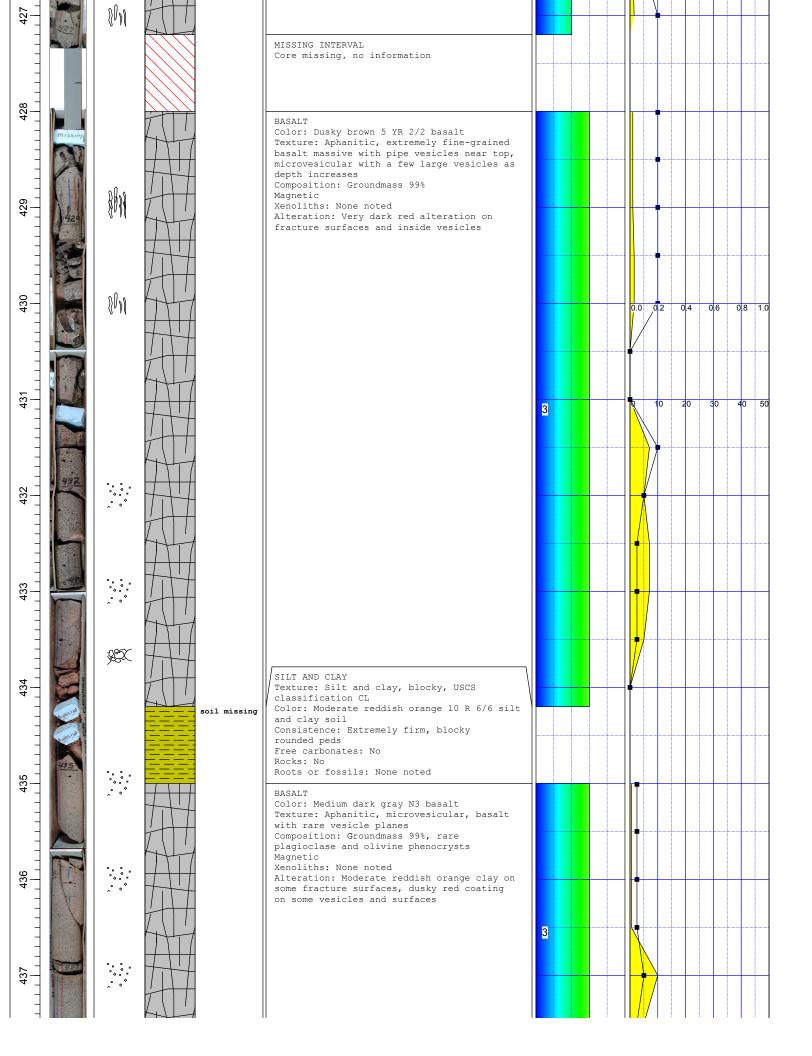


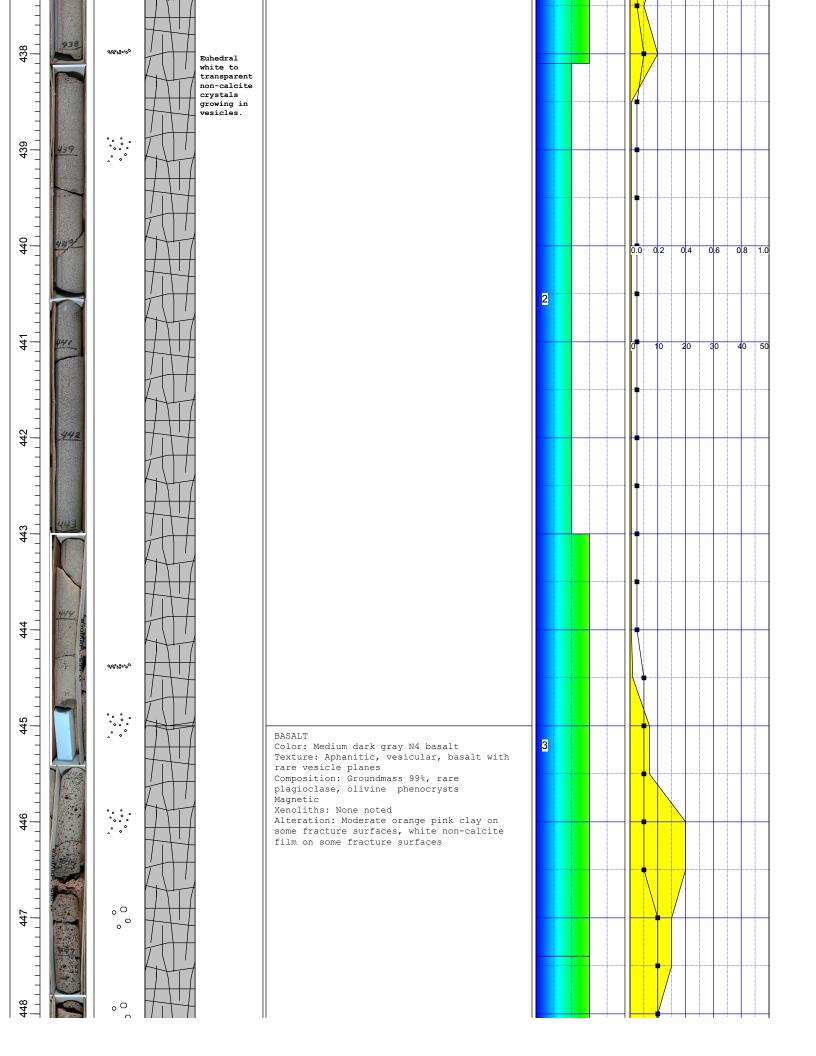


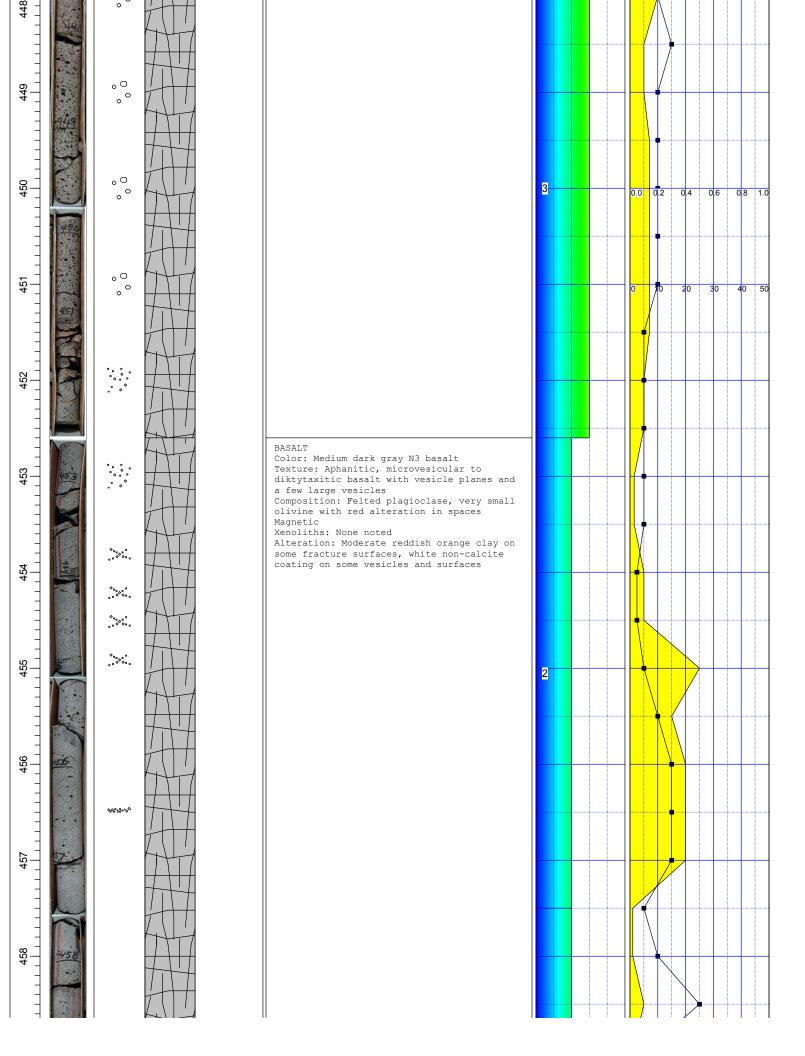


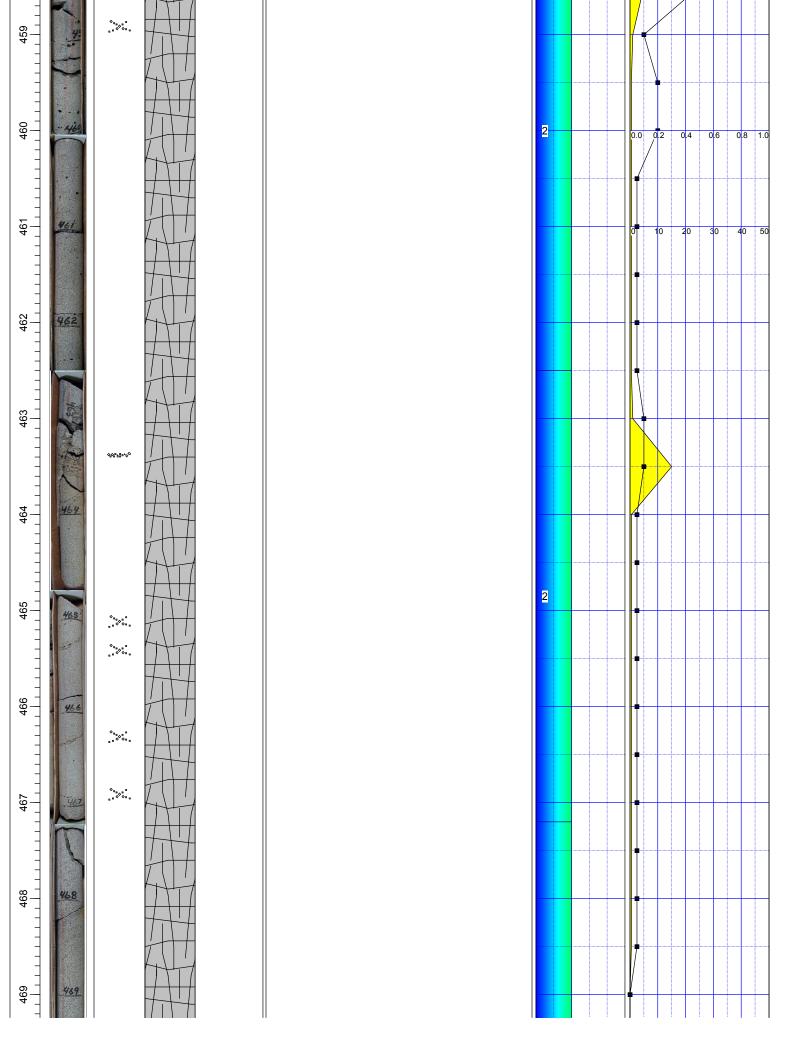


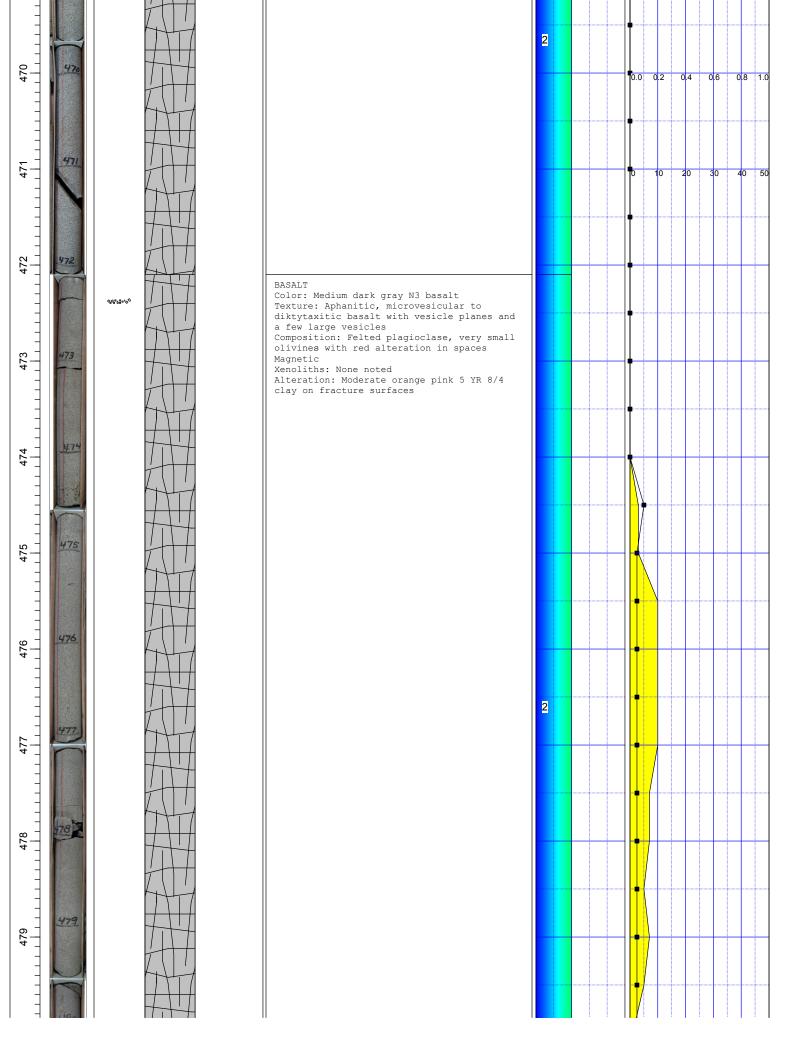


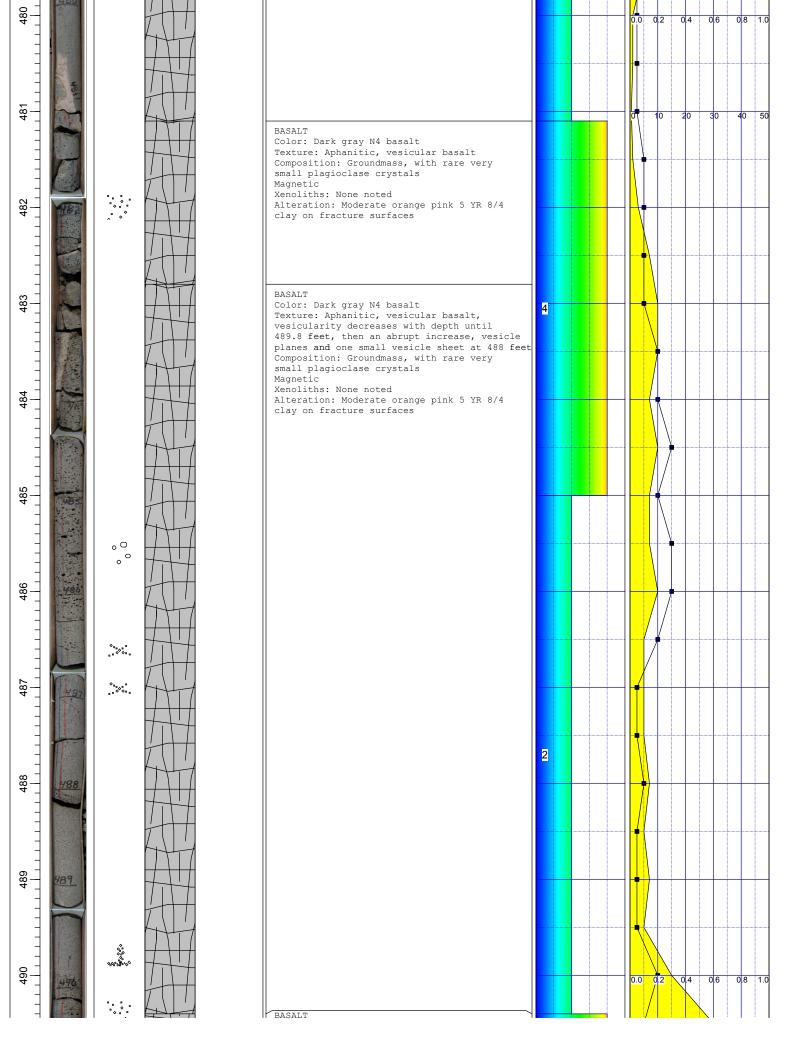


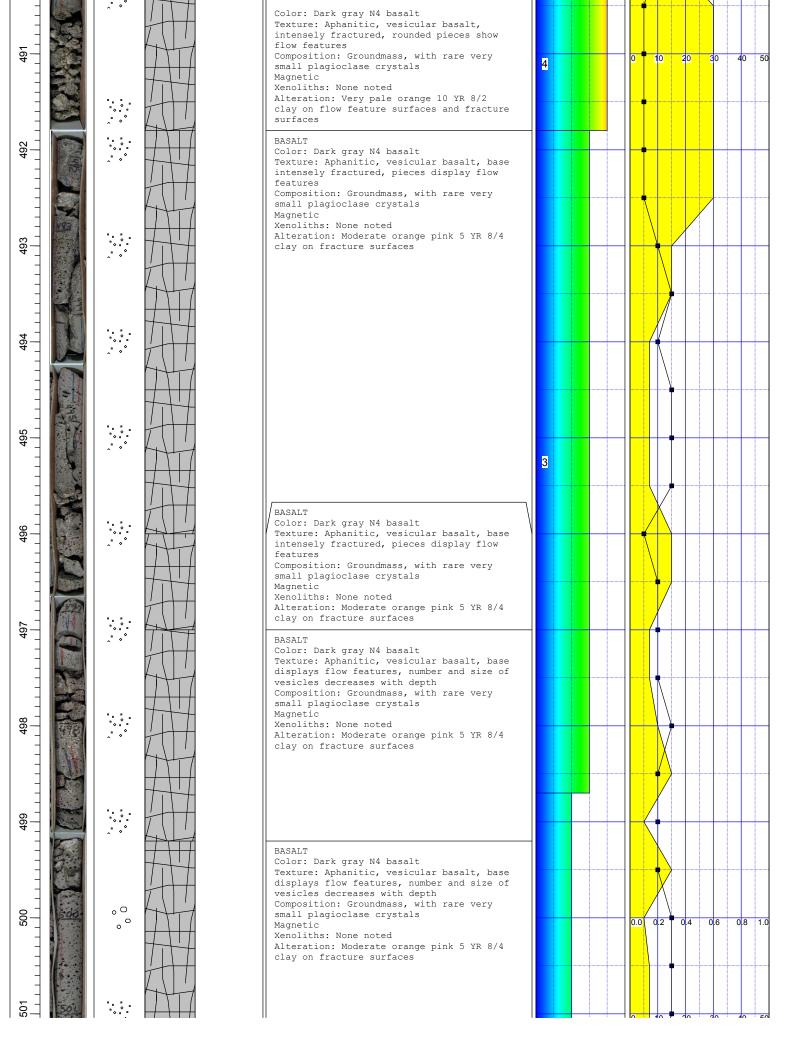


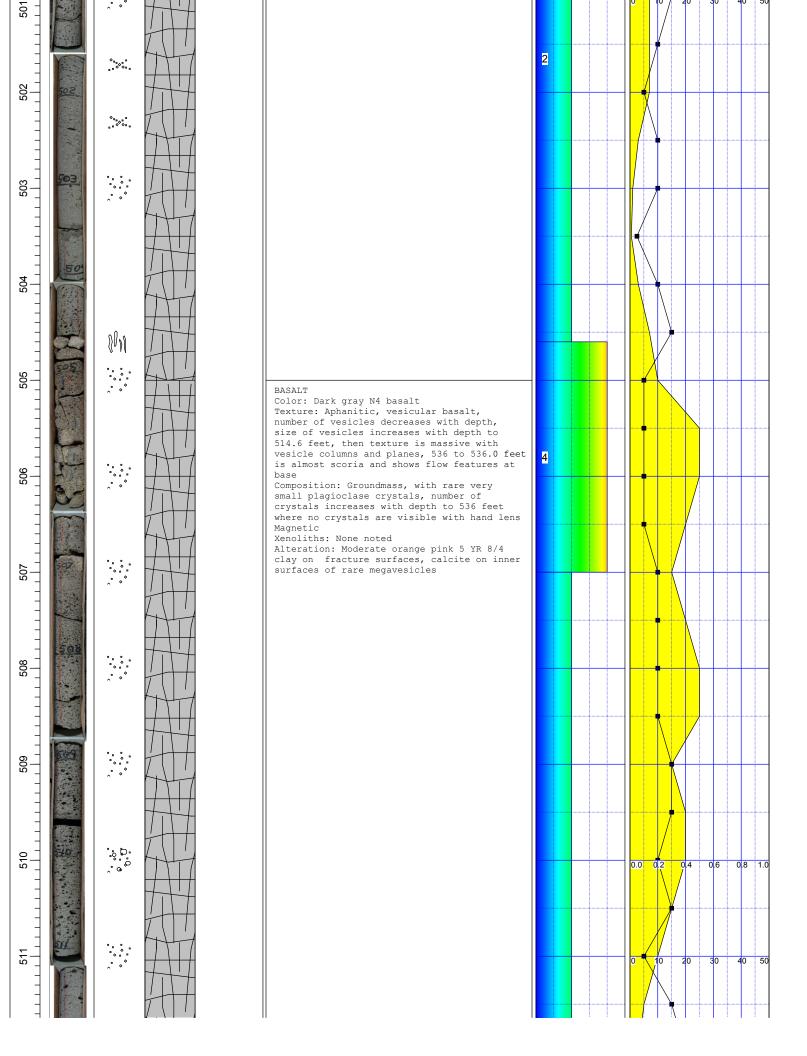


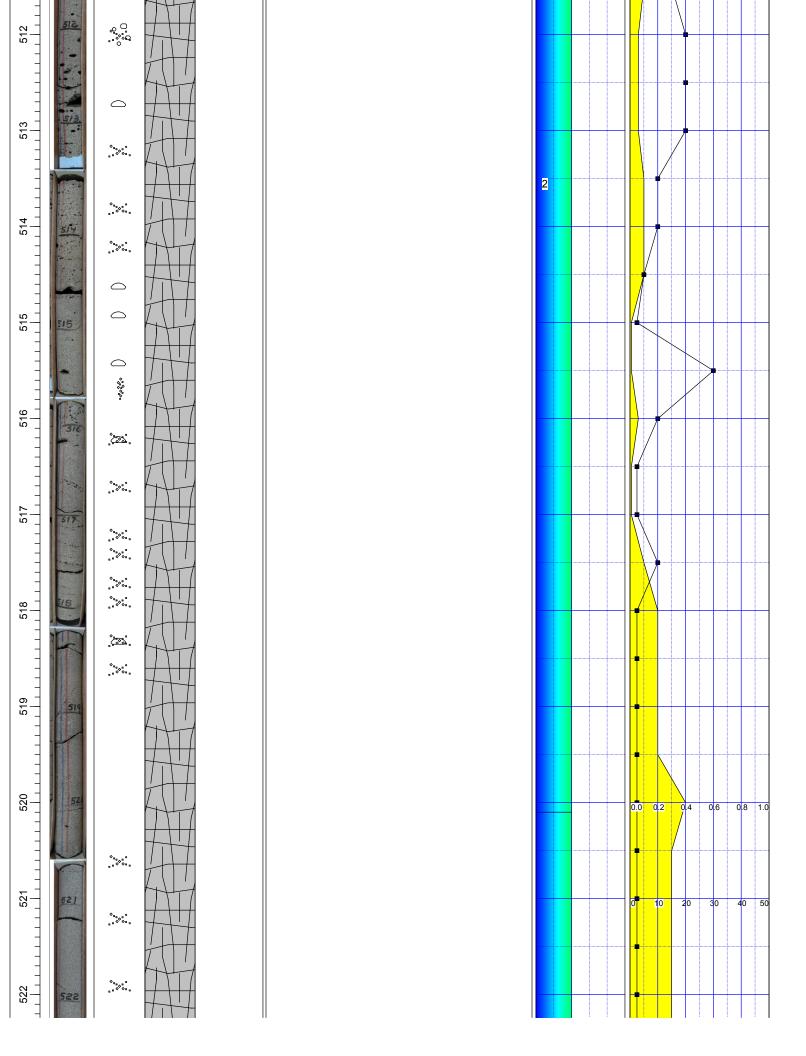


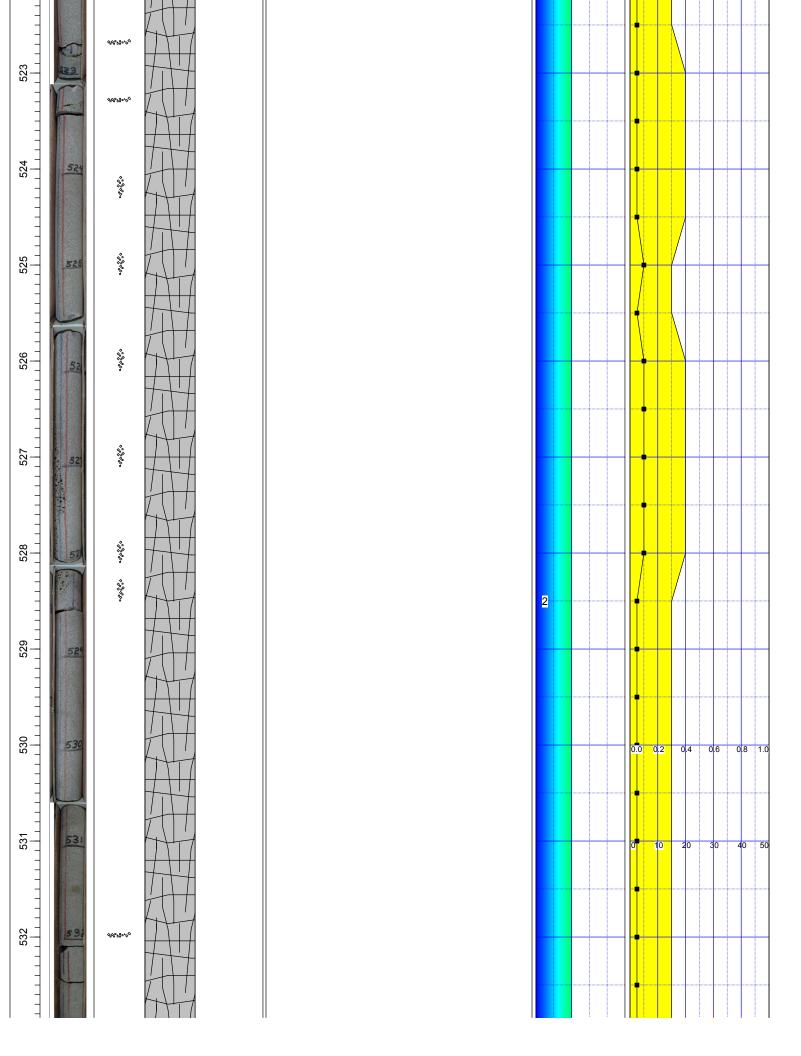


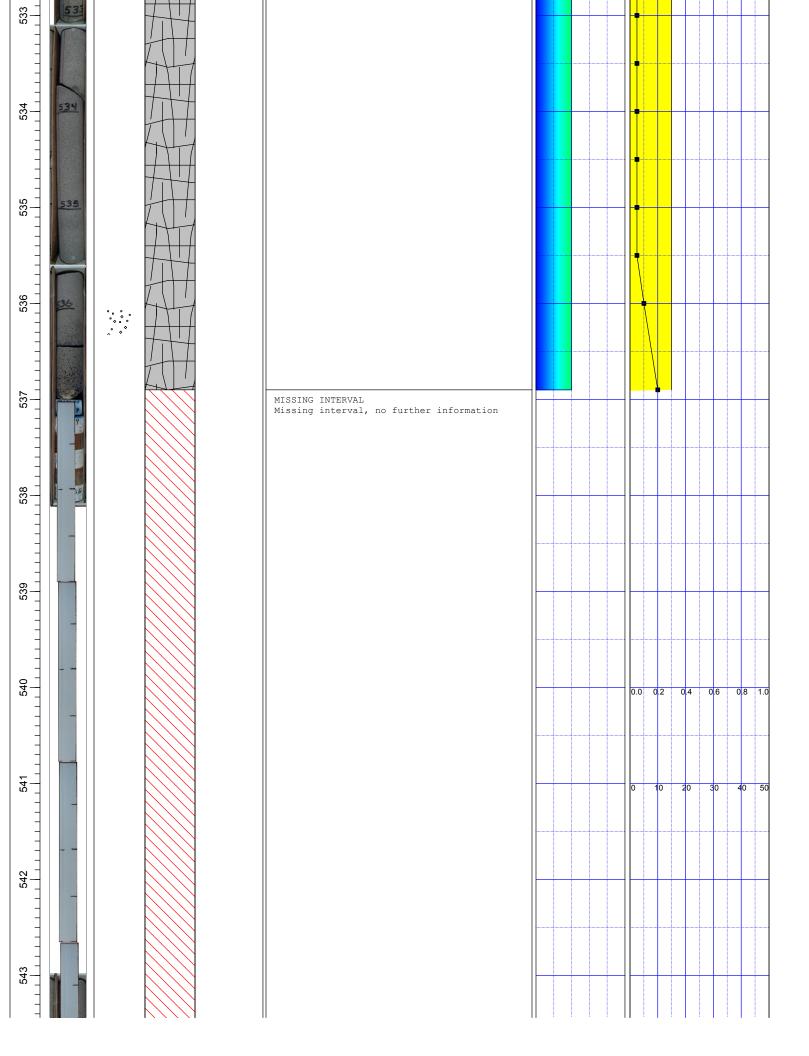


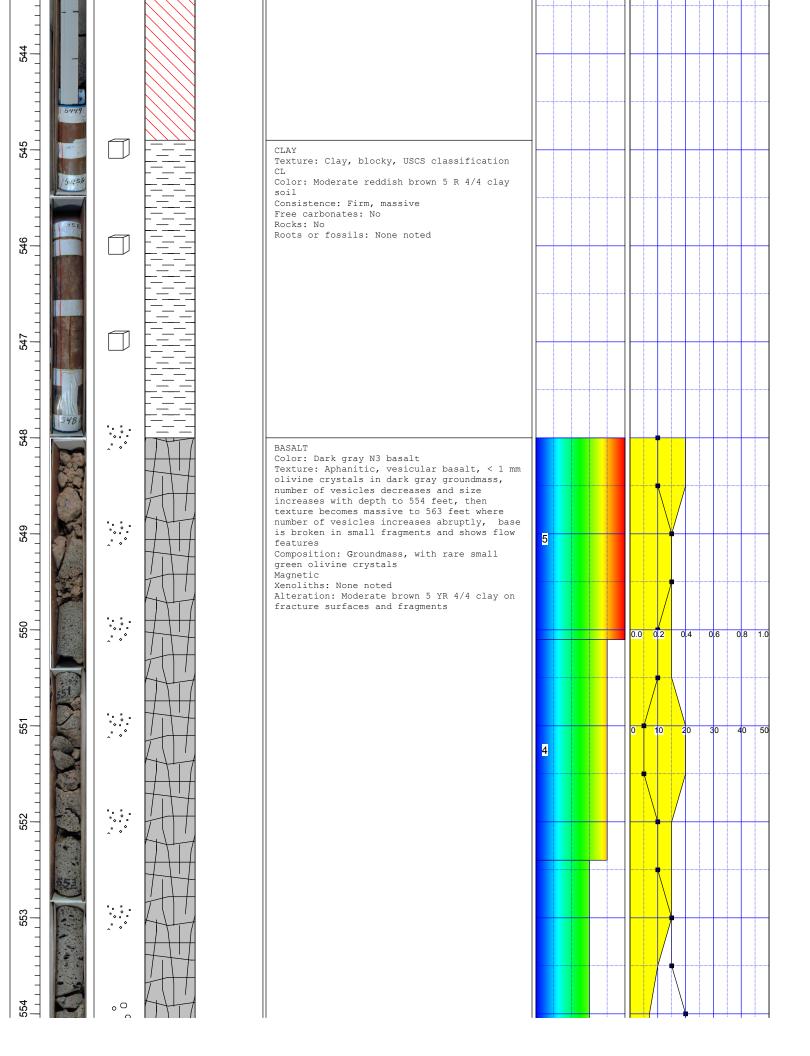


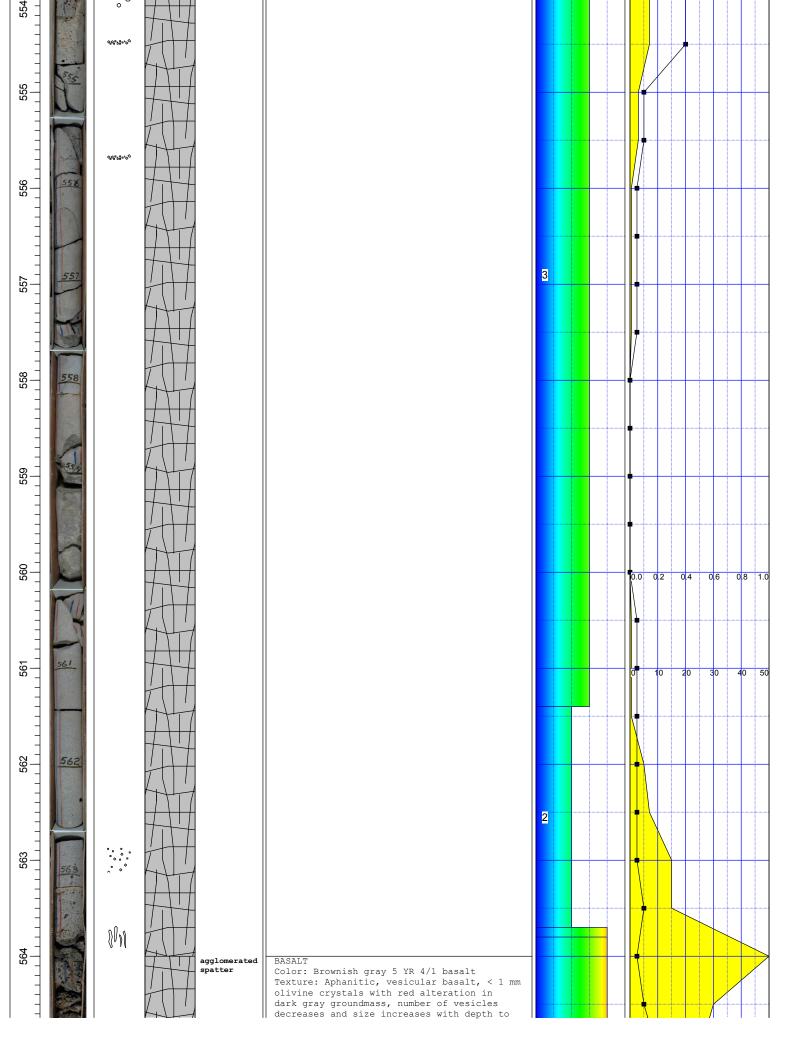


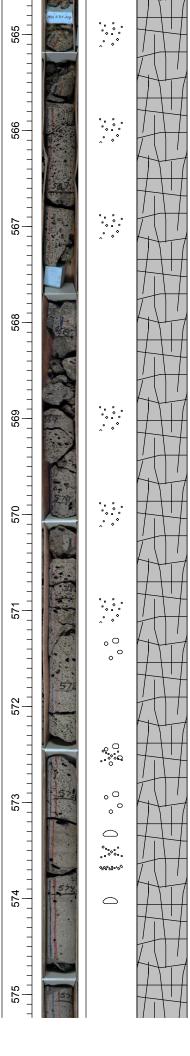




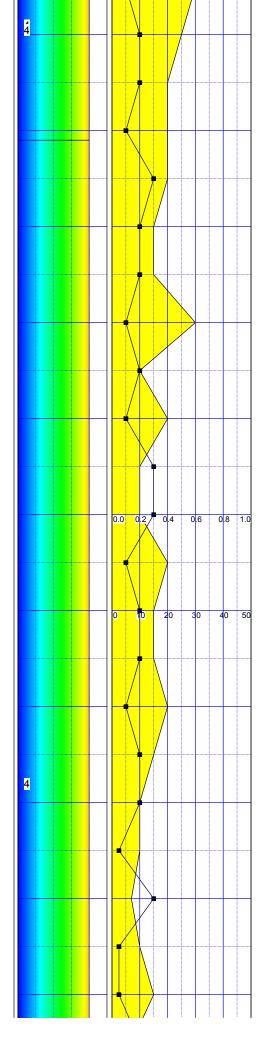


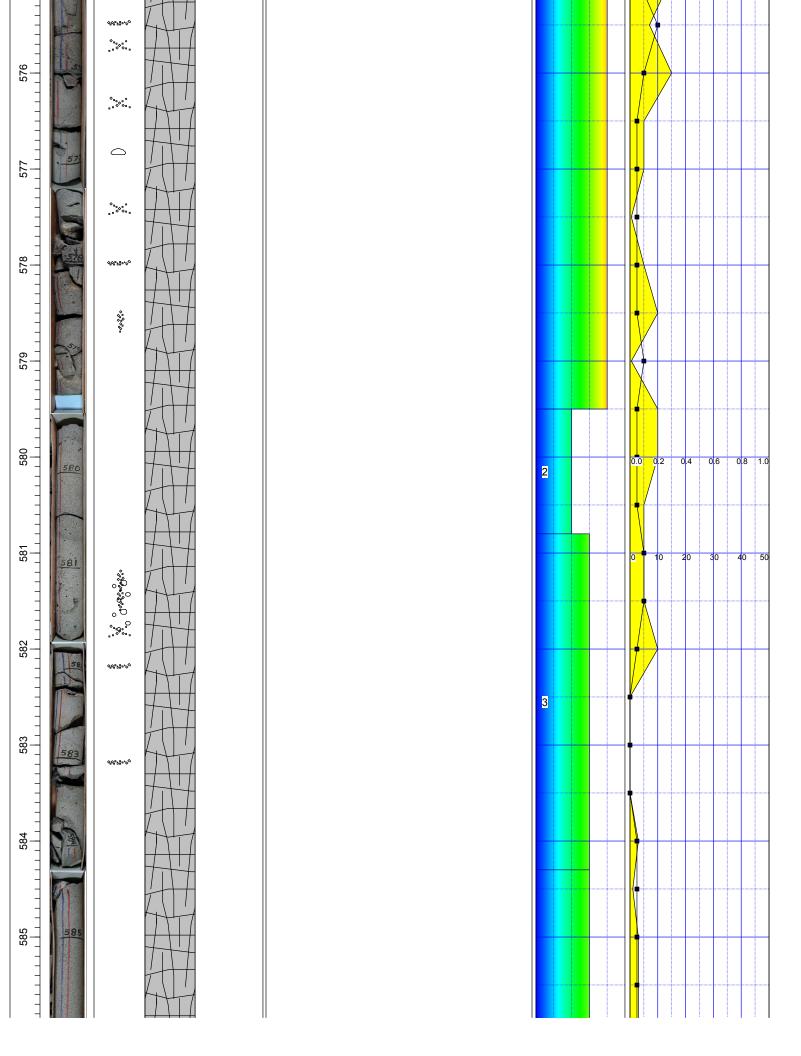


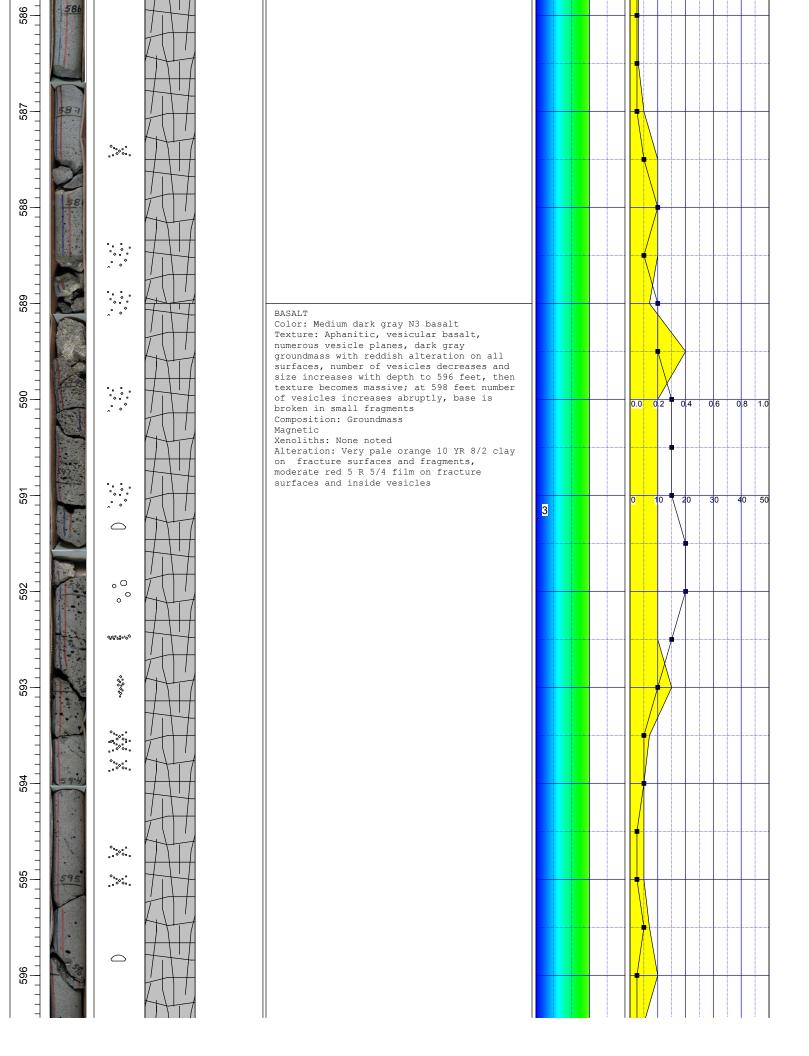


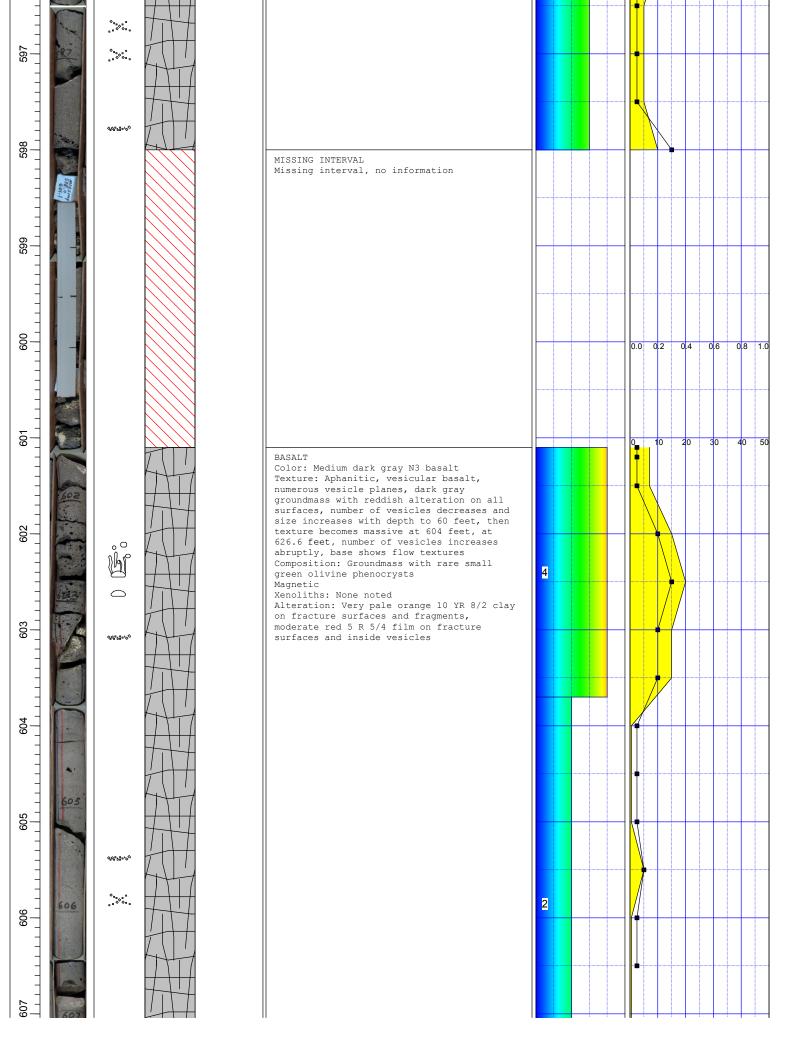


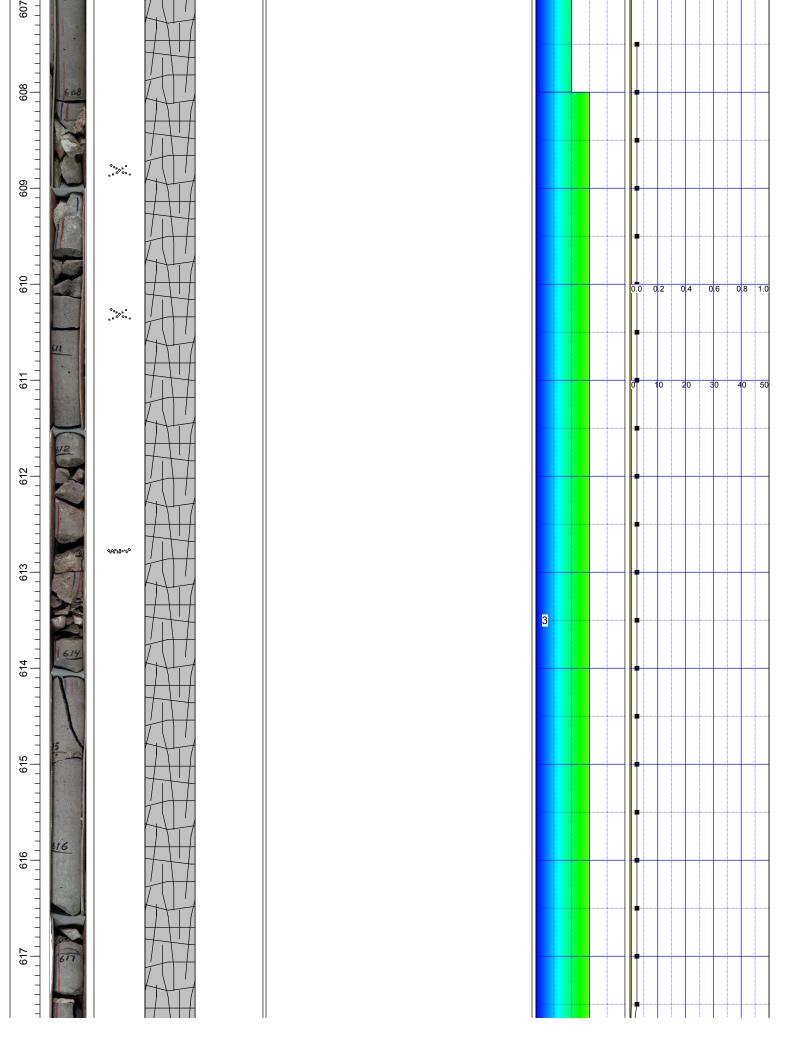
575 feet, then texture becomes massive to 588.5 feet where number of vesicles increases abruptly, base is broken in small fragments
Composition: Groundmass, with reddish olivine crystals
Magnetic
Xenoliths: None noted
Alteration: Very pale orange 10 YR 8/2 clay on fracture surfaces and fragments, moderate red 5 R 5/4 film on some fracture surfaces and inside some vesicles

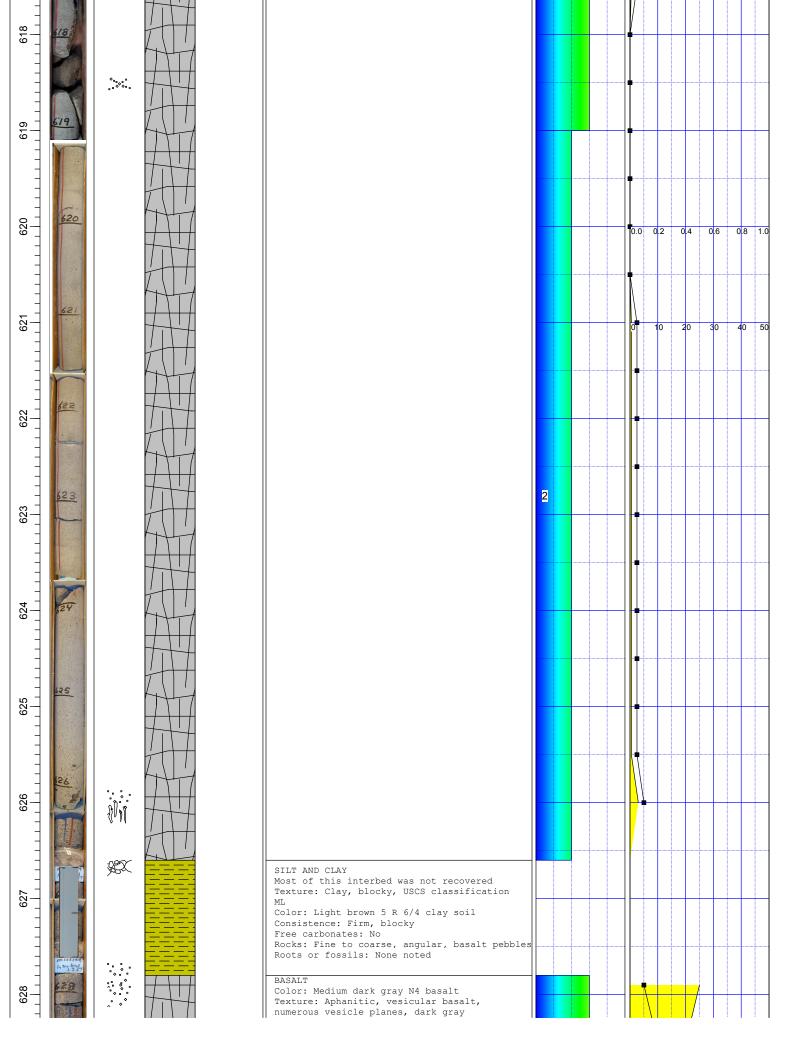


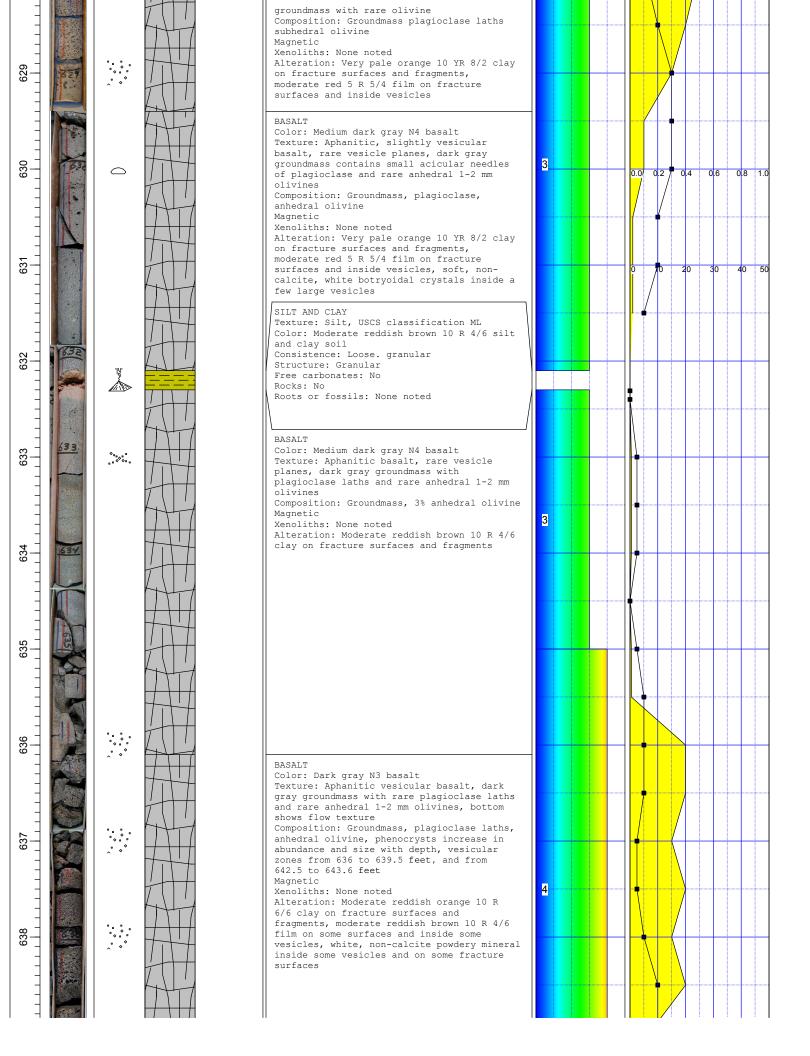


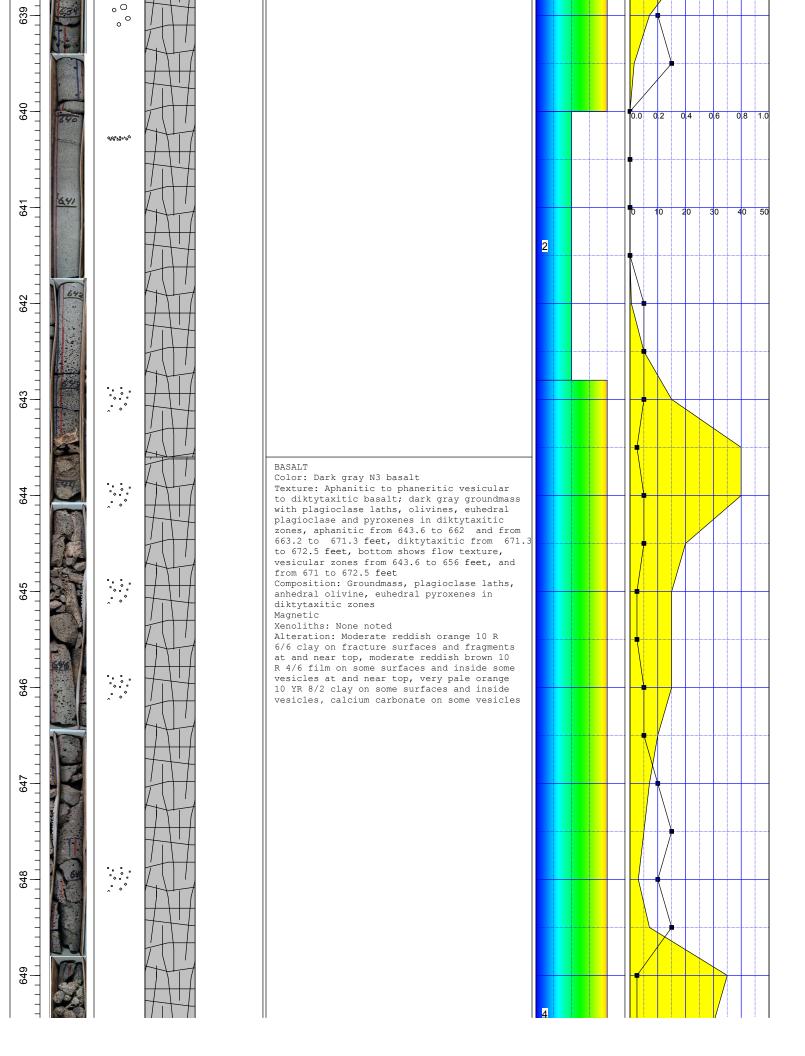


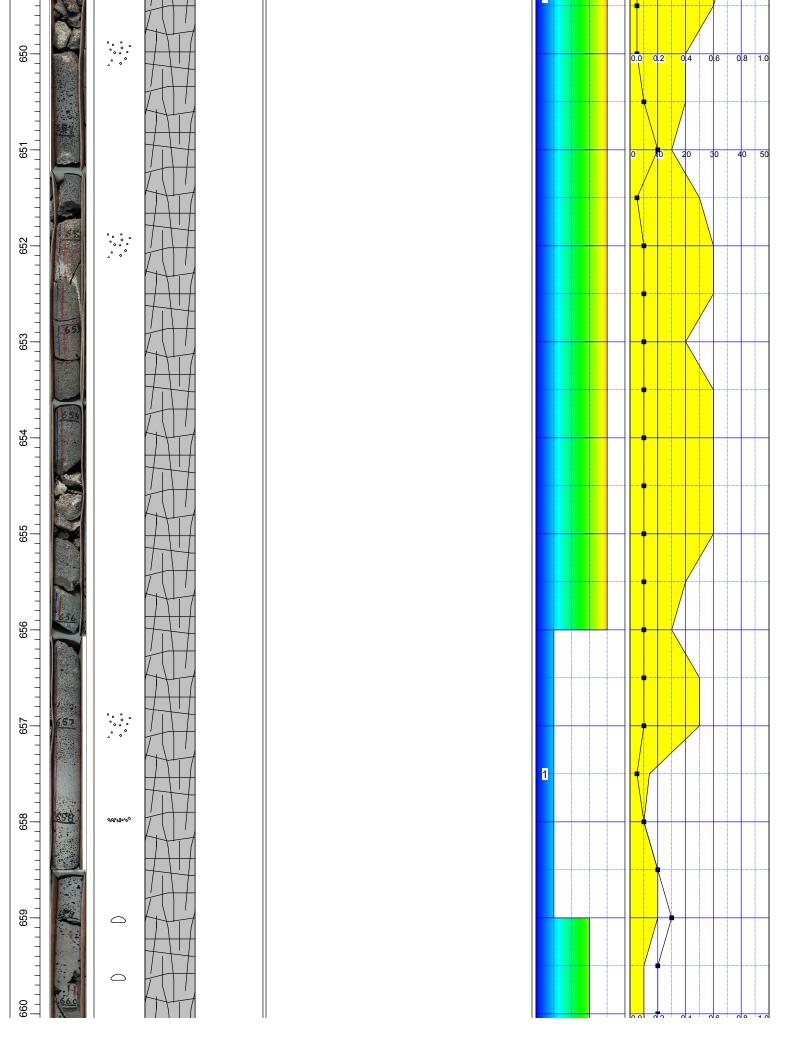


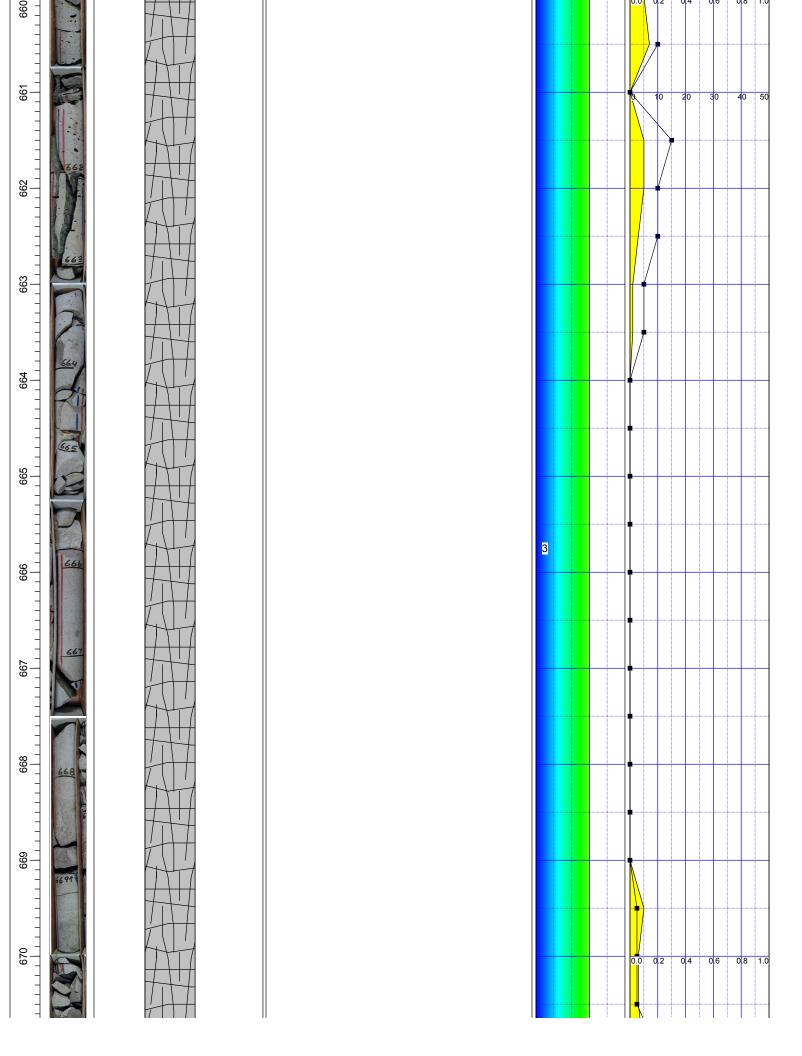


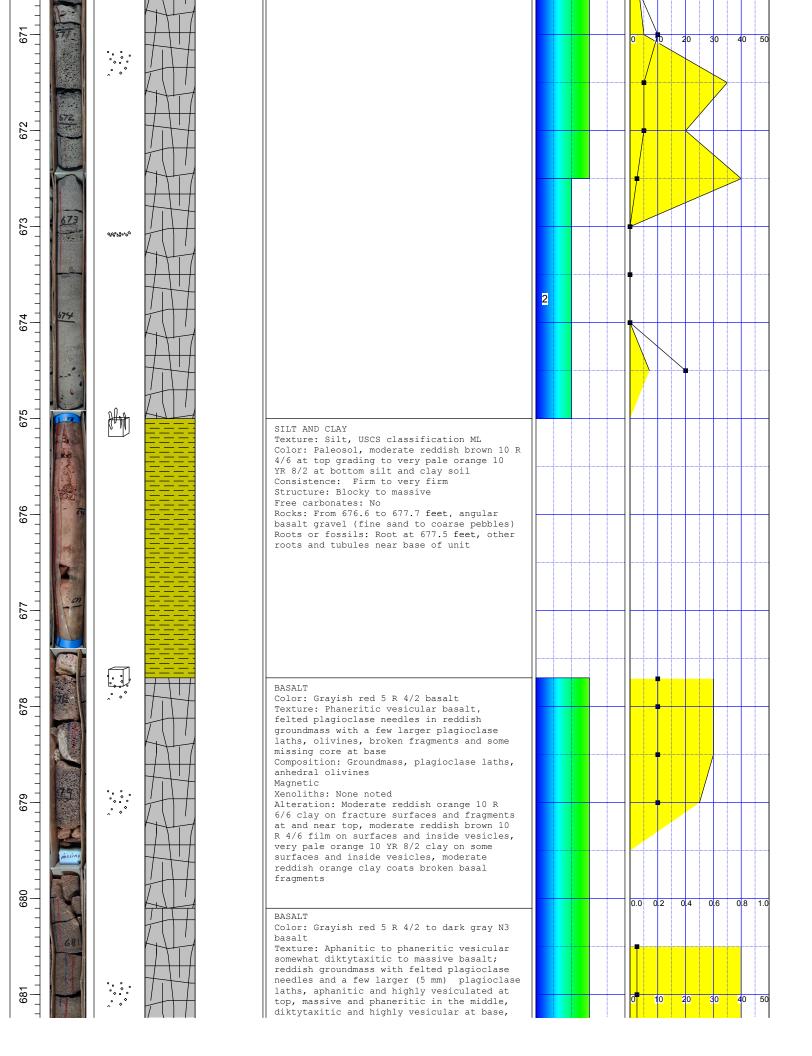


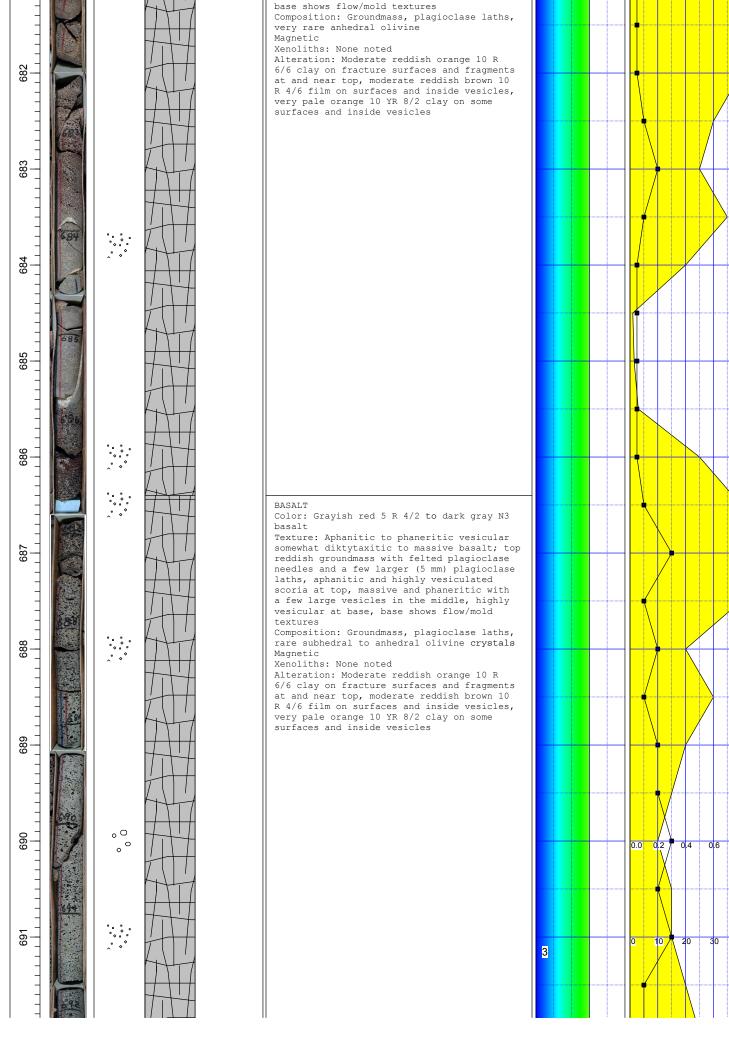






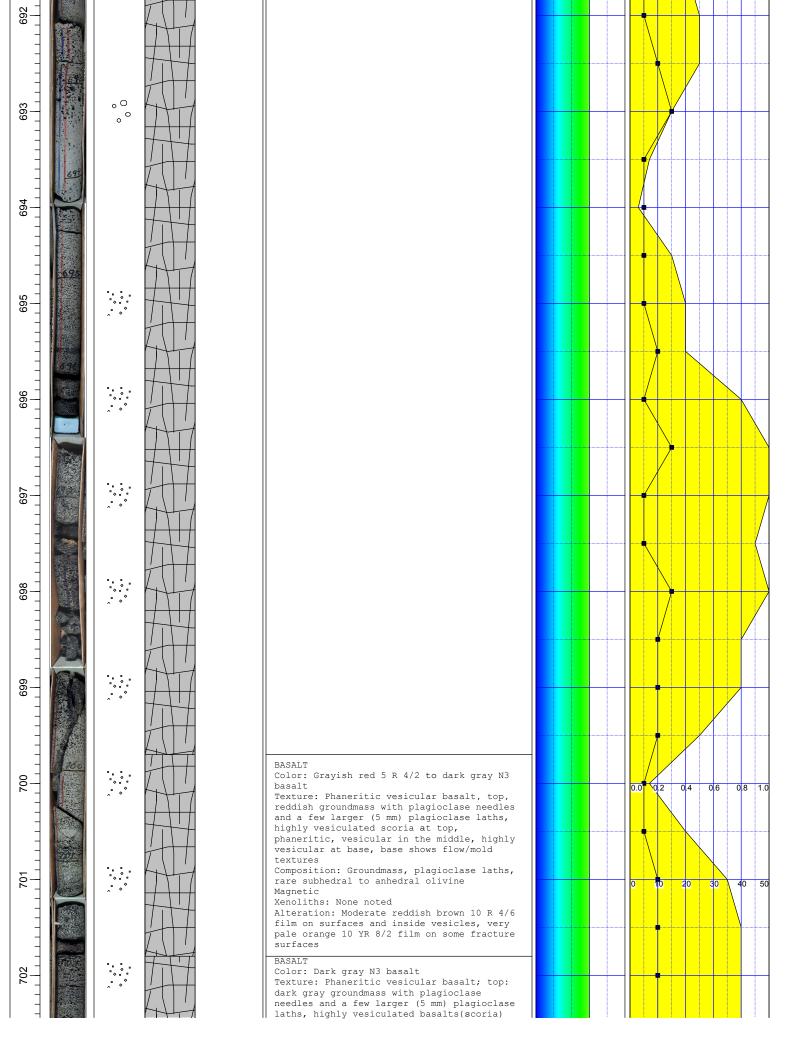


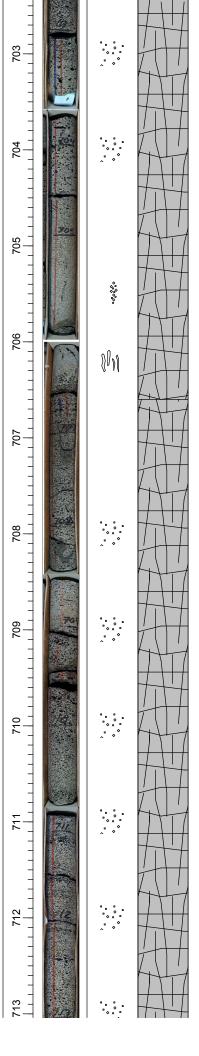




0.8 1.0

50



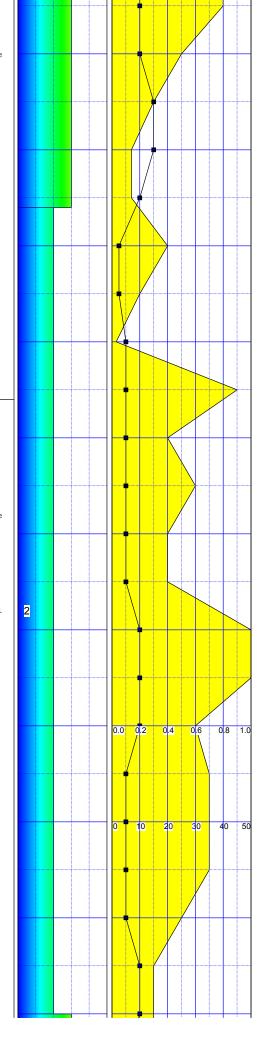


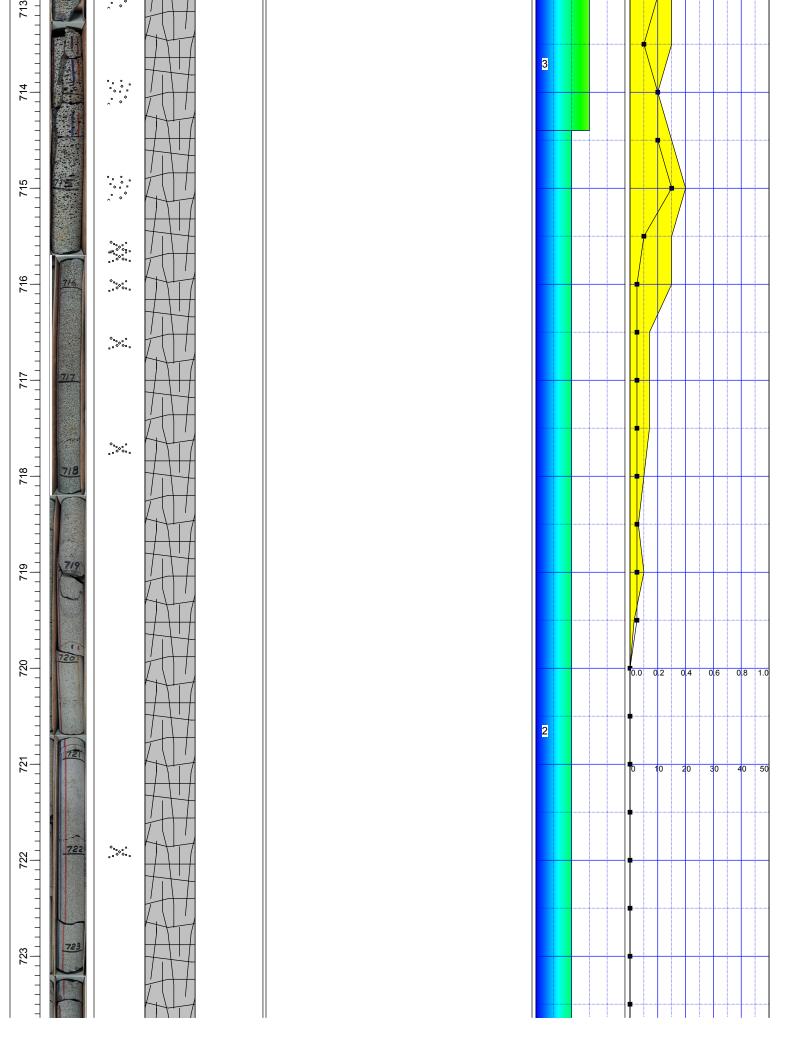
at top, phaneritic, massive in the middle, vesicular at base, base shows flow/mold textures; some vesicle columns, pipe vesicles at base Composition: 75% groundmass, 20% plagioclase laths, 5% subhedral to anhedral olivine Magnetic Xenoliths: None noted Alteration: Moderate reddish brown 10 R 4/6 film on surfaces and inside vesicles, very pale orange 10 YR 8/2 film on some fracture surfaces

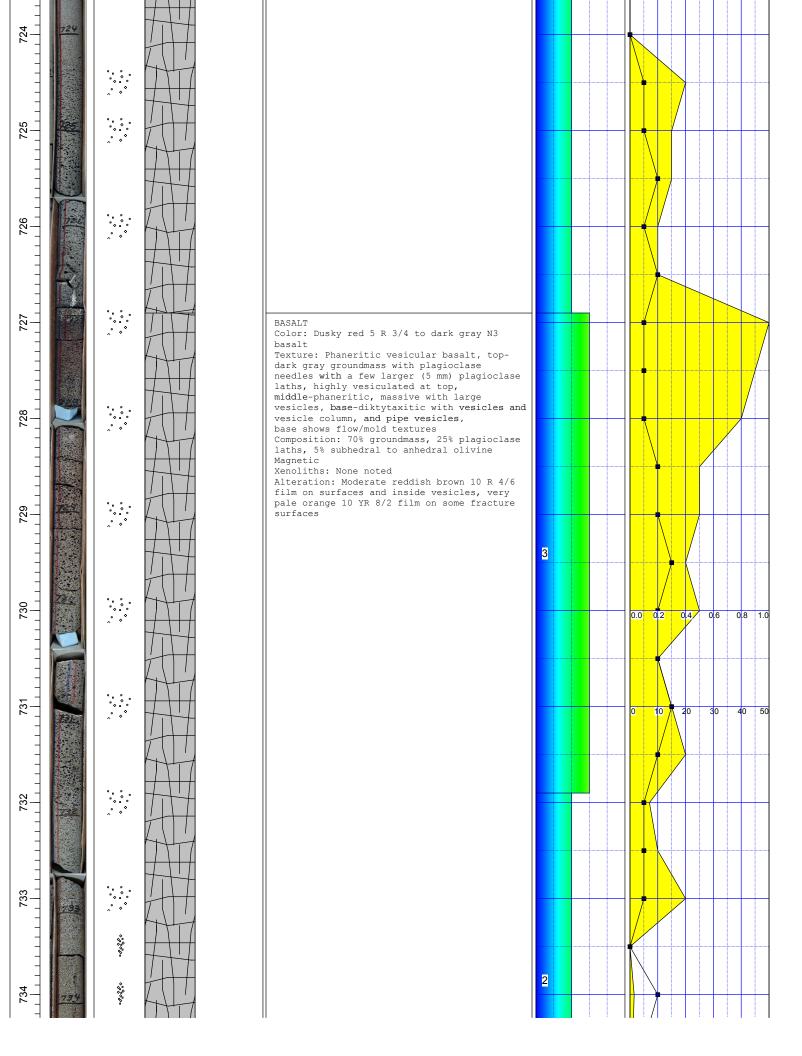
## BASALT

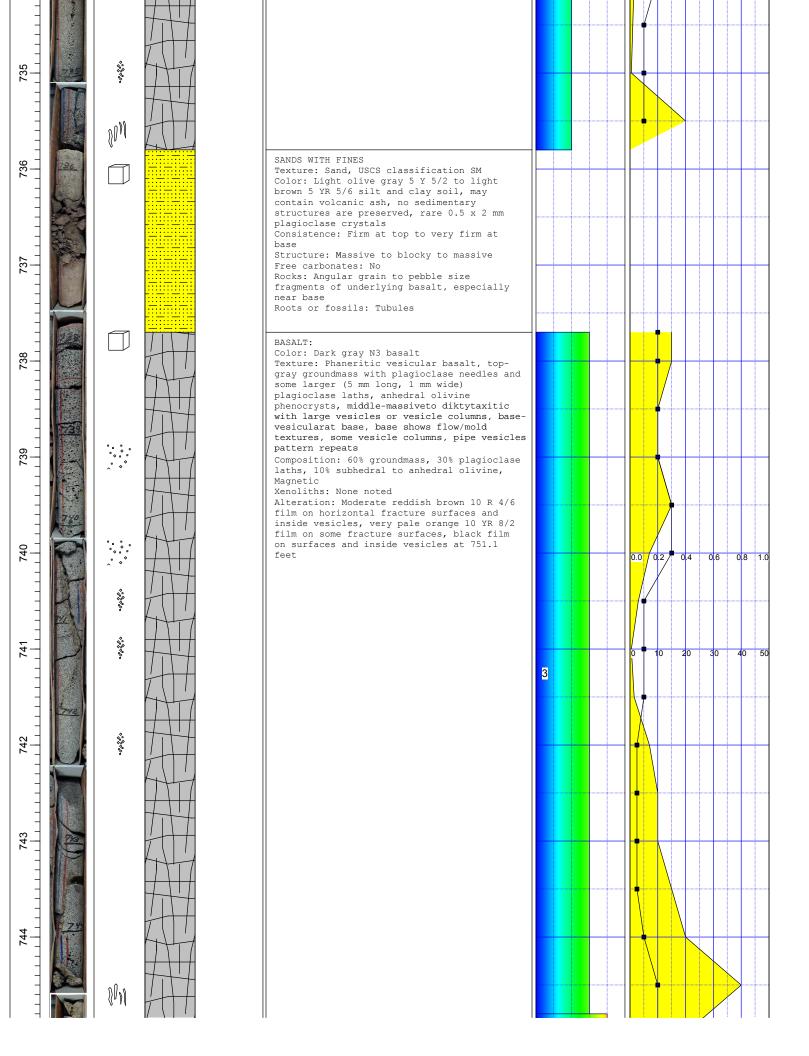
Color: Dark gray N3 basalt
Texture: Phaneritic vesicular to massive
basalt, top-dark gray groundmass with
plagioclase needles and a few larger (5 mm)
plagioclase laths and rare small anhedral
olivine, vesiculated at top, middlephaneritic, vesicular to massive, basevesicular, base shows flow/mold textures,
some vesicle columns,pipe vesicles at base
Composition: 75% groundmass, 20% plagioclase
laths, 5% subhedral to anhedral olivine
Magnetic
Xenoliths: None noted

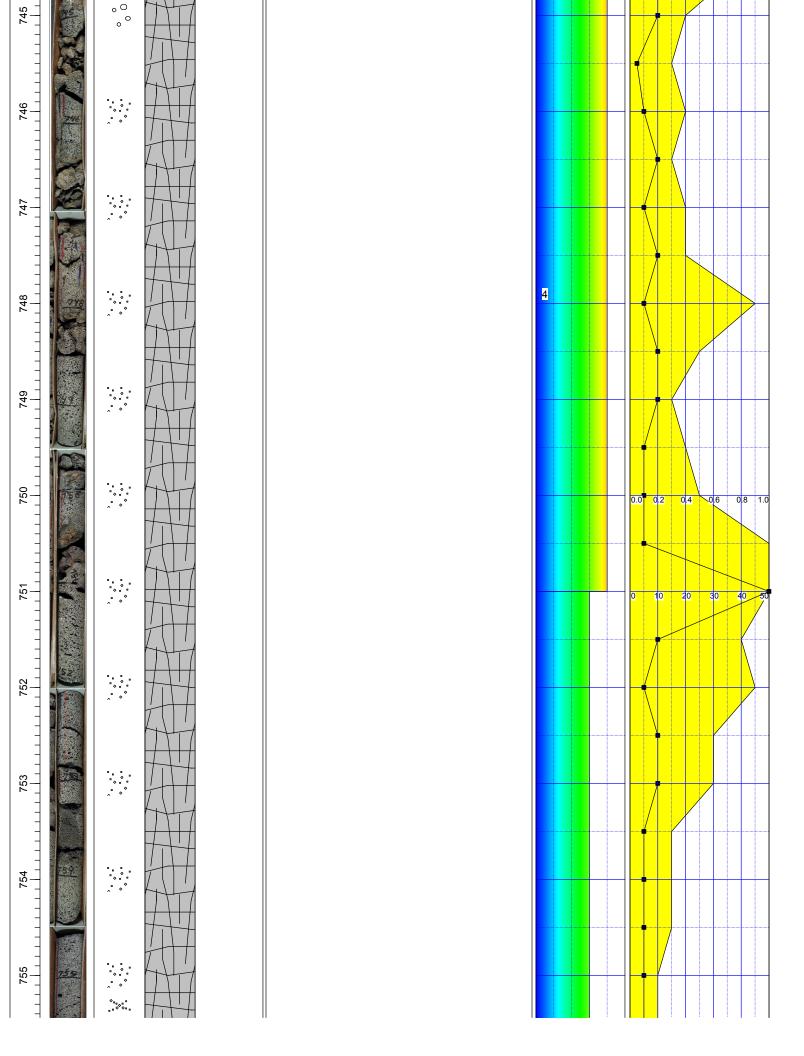
Alteration: Moderate reddish brown 10 R 4/6 film on surfaces and inside vesicles, very pale orange 10 YR 8/2 film on some fracture surfaces, very thin cindery material at top and on surfaces at 709.1, 709.5, and 709.7 feet, radiating acicular calcite in vertical fracture at base

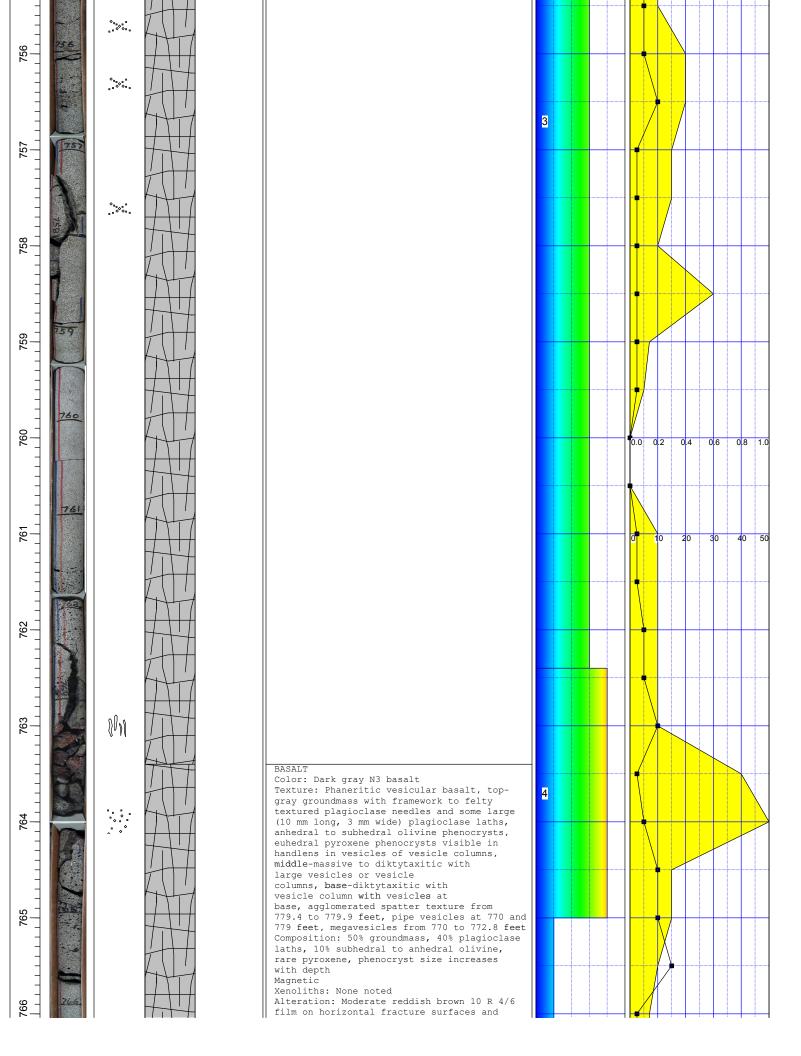


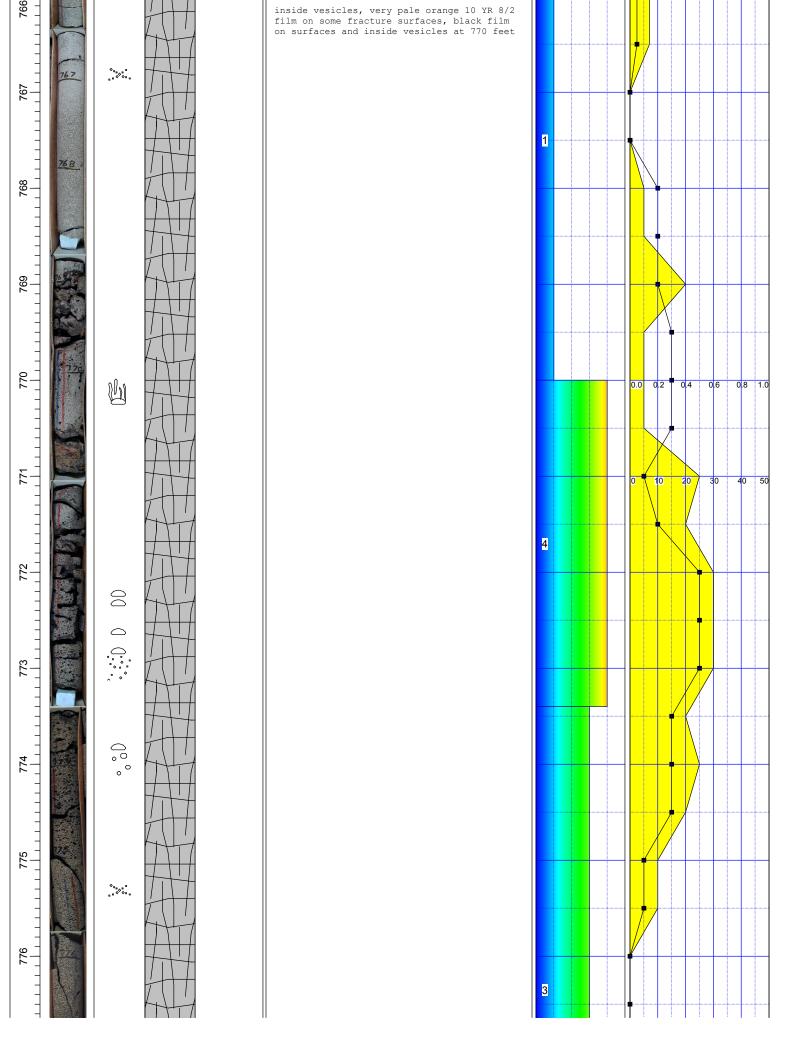


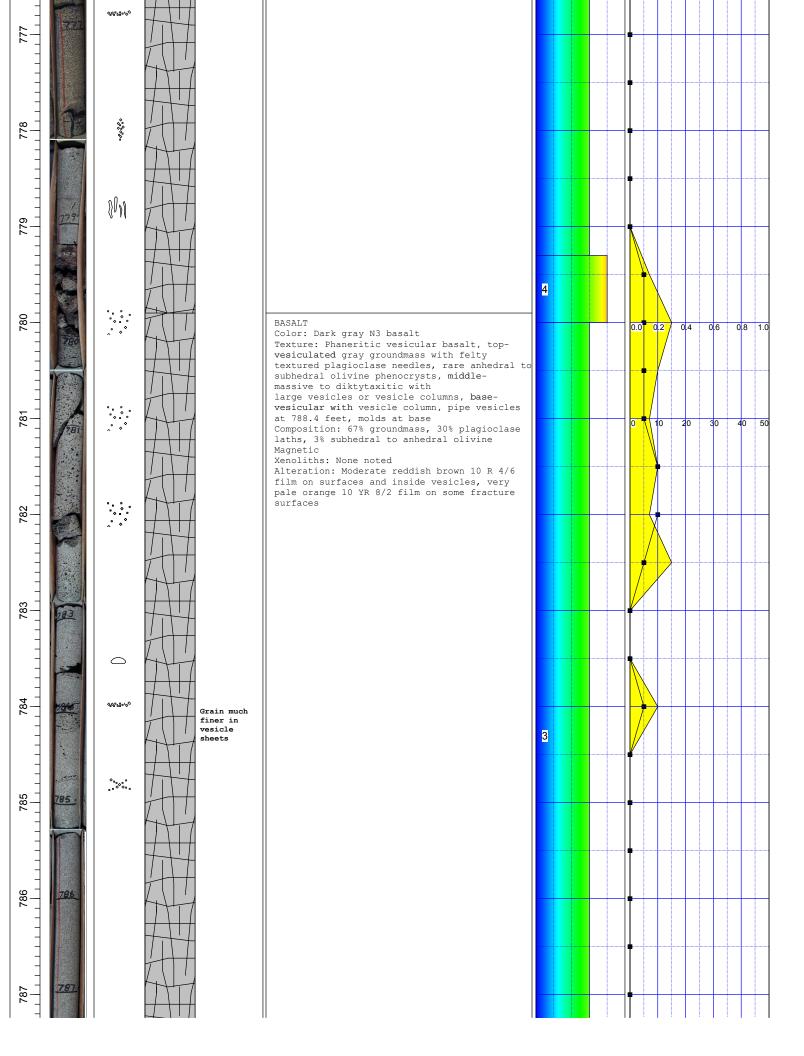


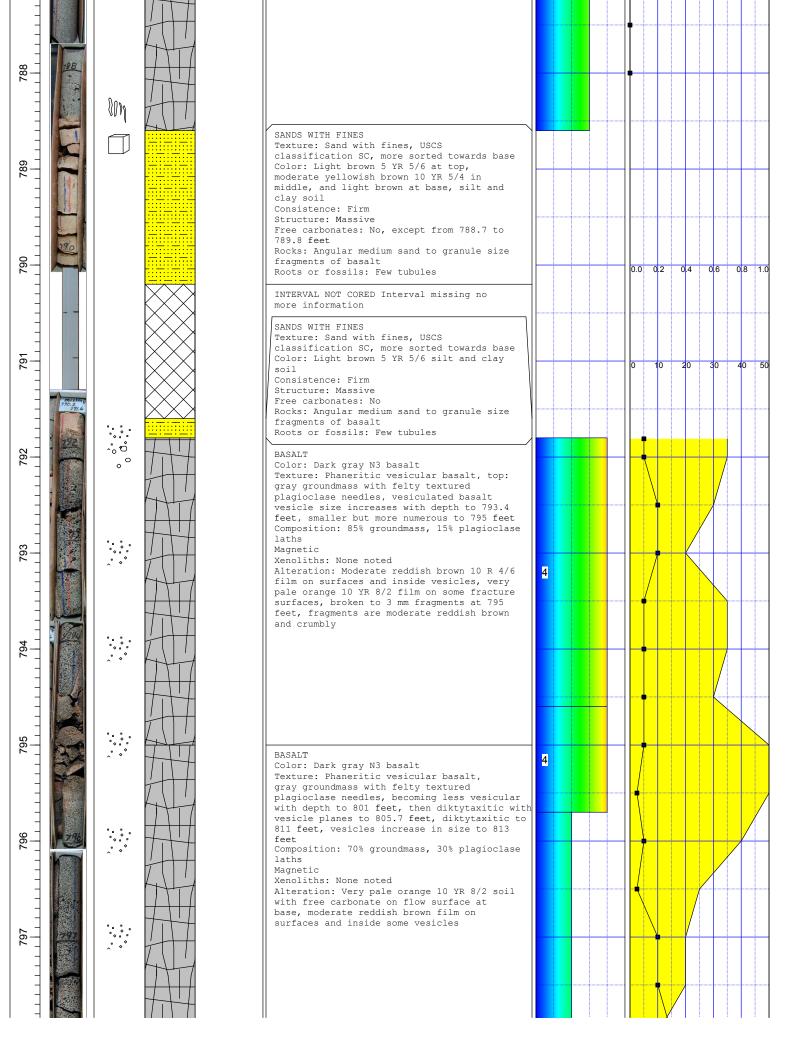


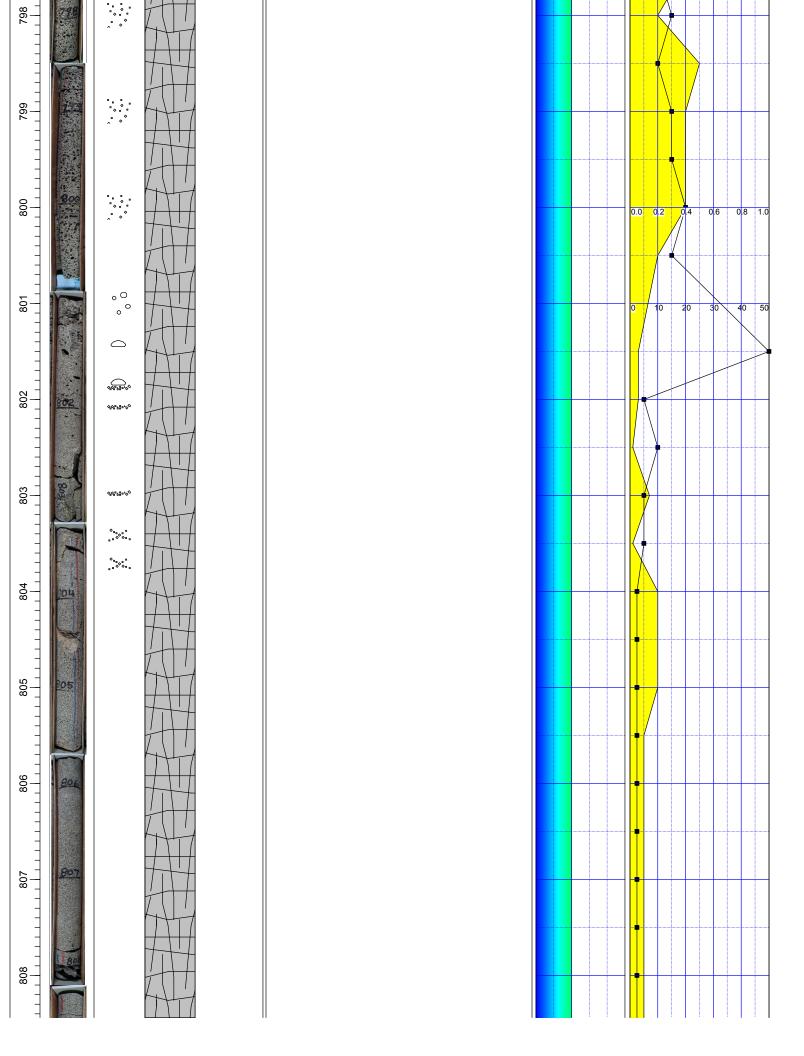


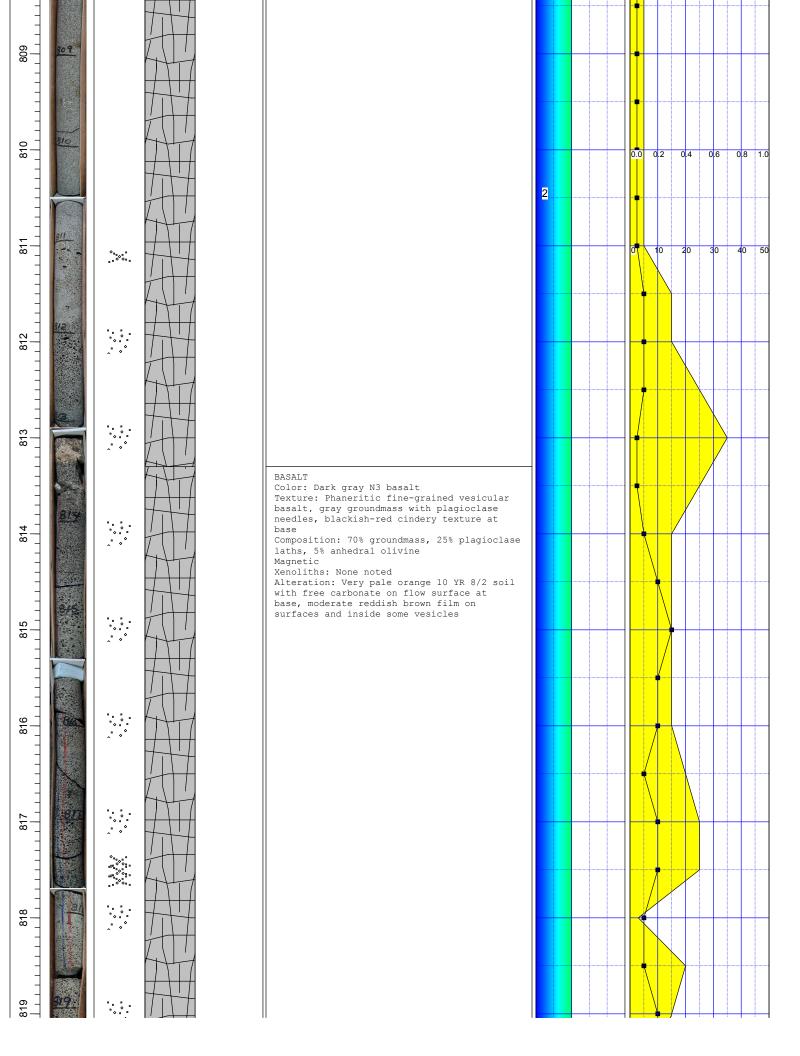


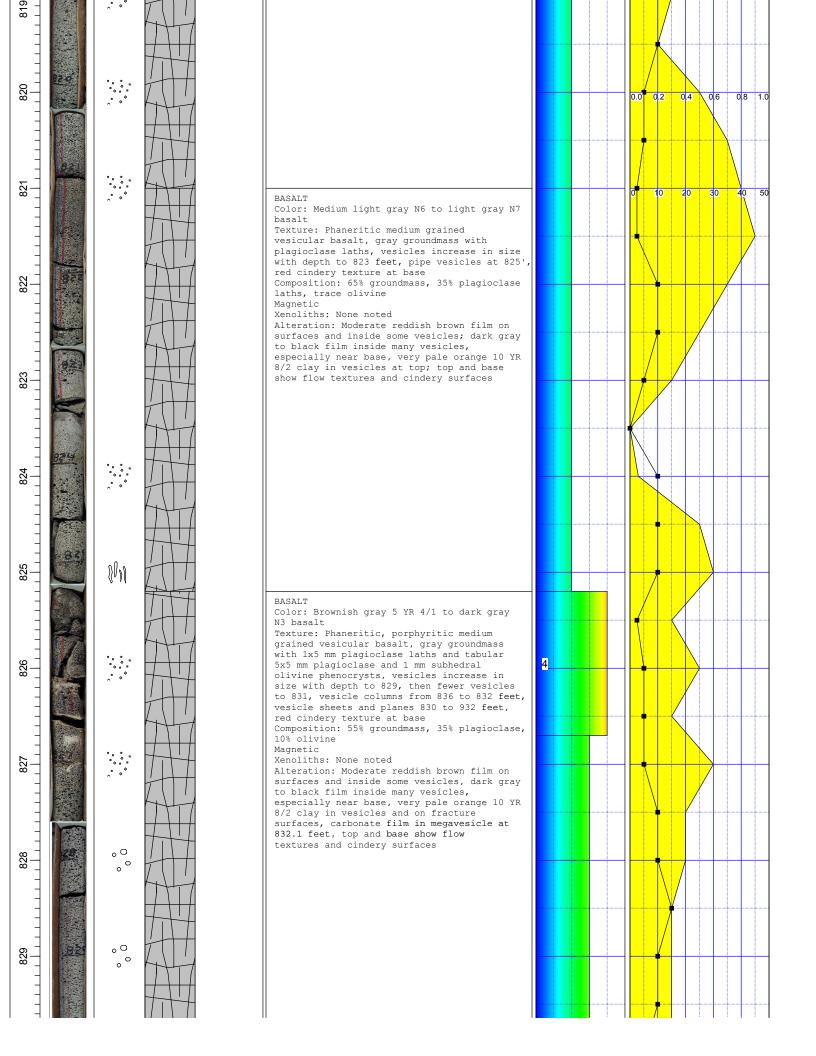


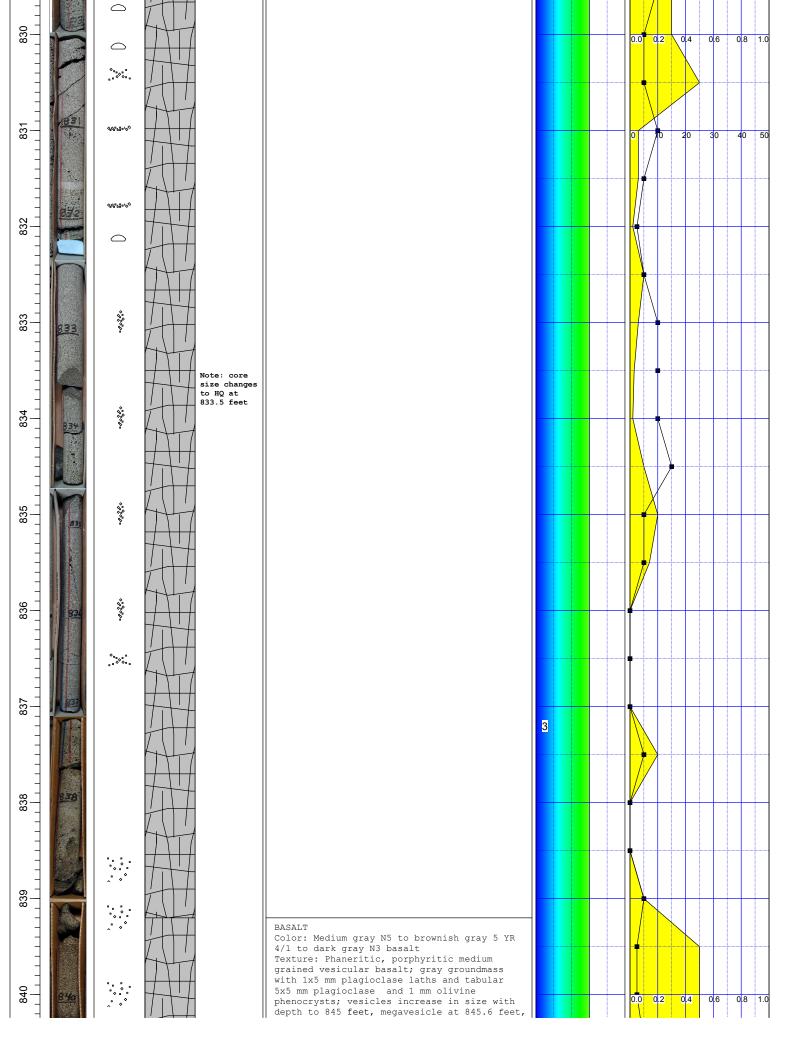


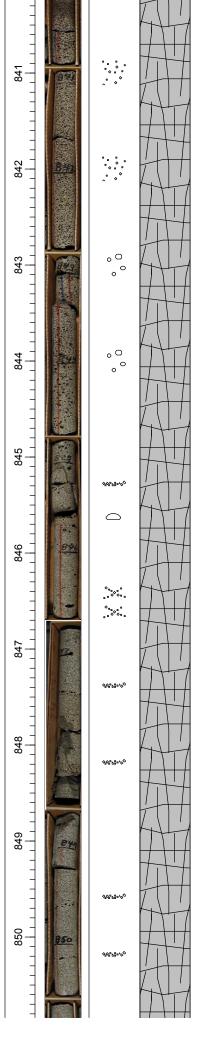












massive to diktytaxitic with vesicle sheets and planes to 855 feet, then massive with rare vesicle planes to 871.3 feet, vesicular at base, pipe vesicle at 871.4 feet, flow textures at base

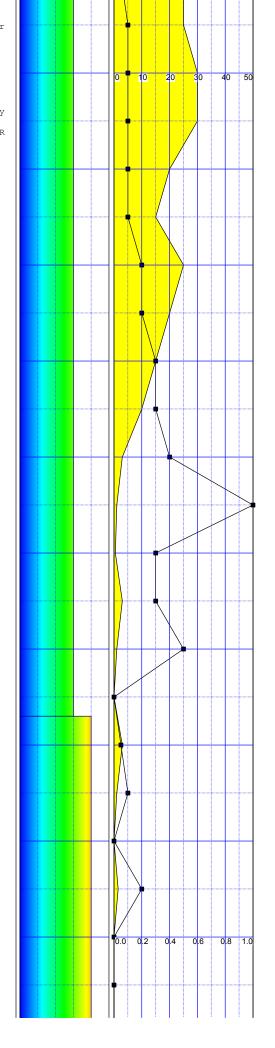
Composition: 55% groundmass, 35%

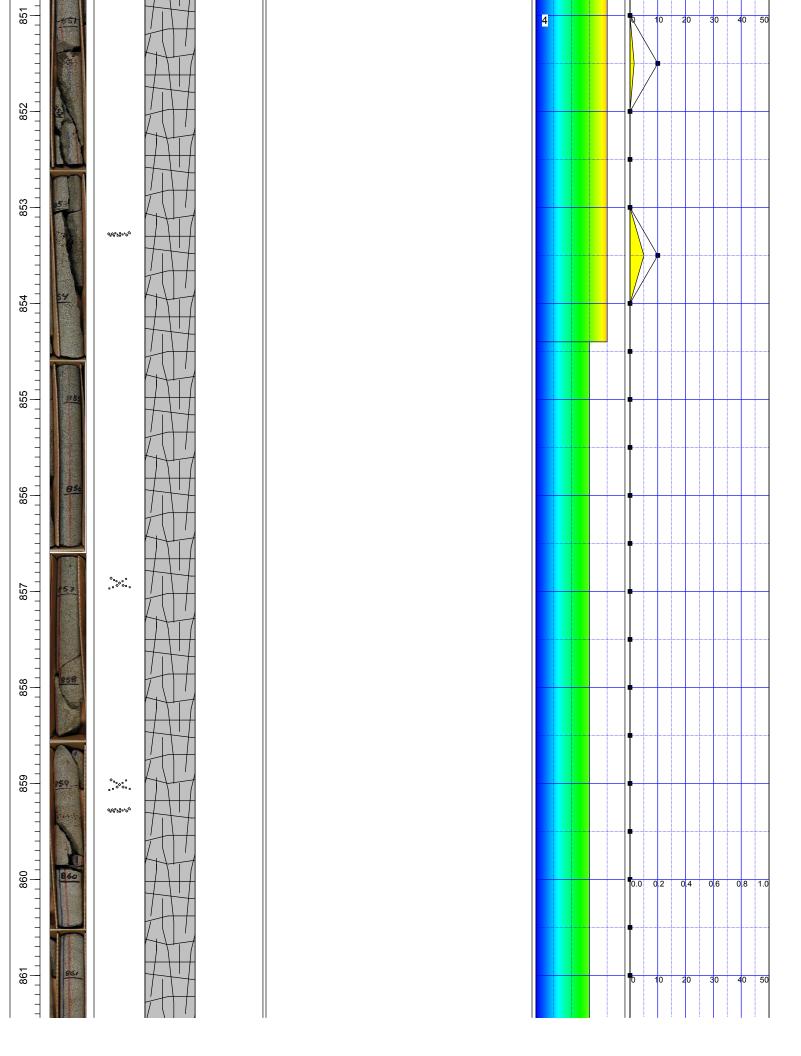
plagioclase, 10% olivine

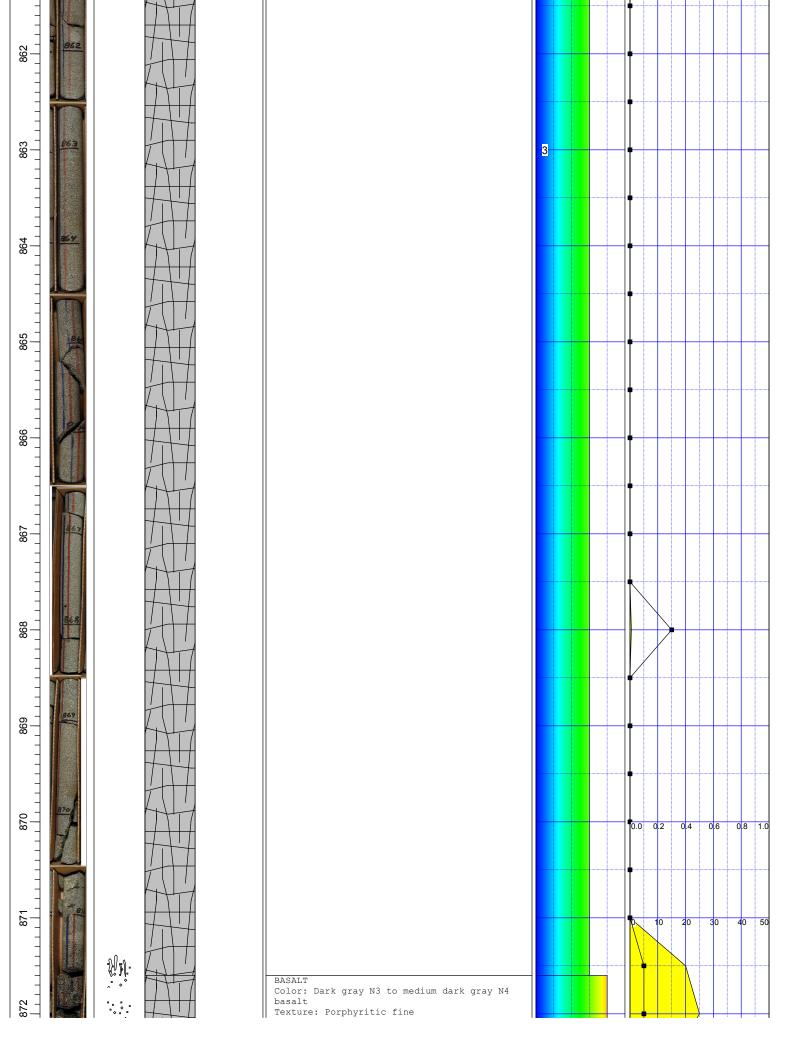
Magnetic

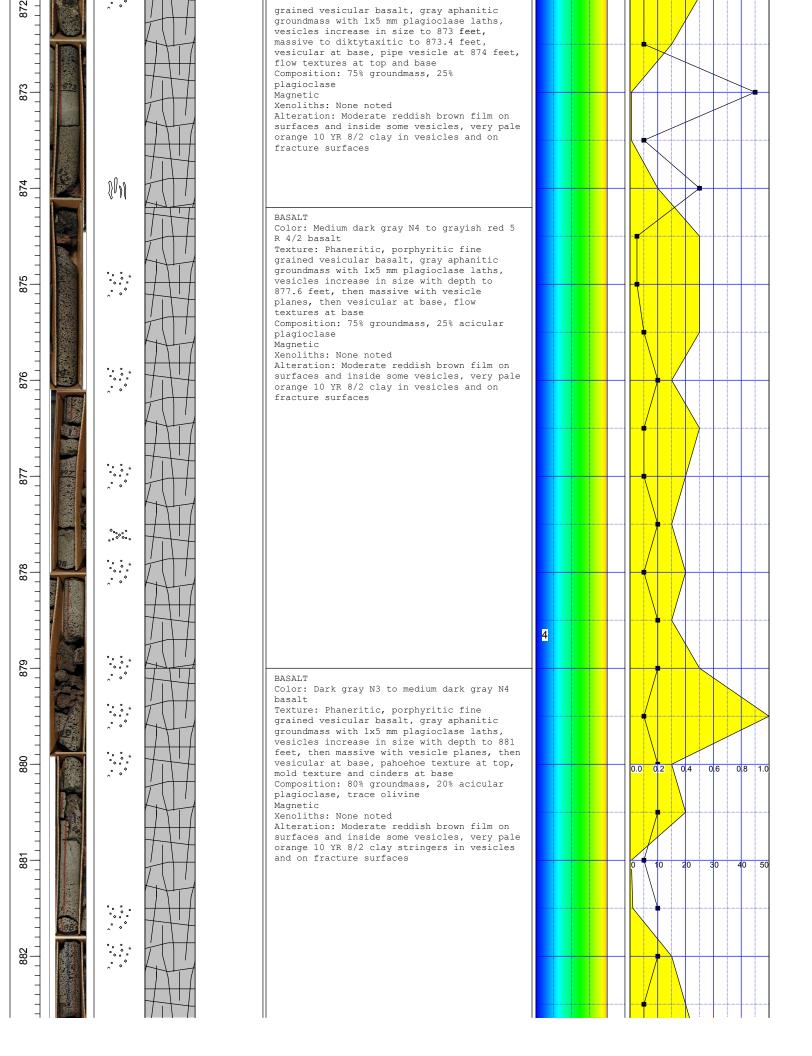
Xenoliths: None noted

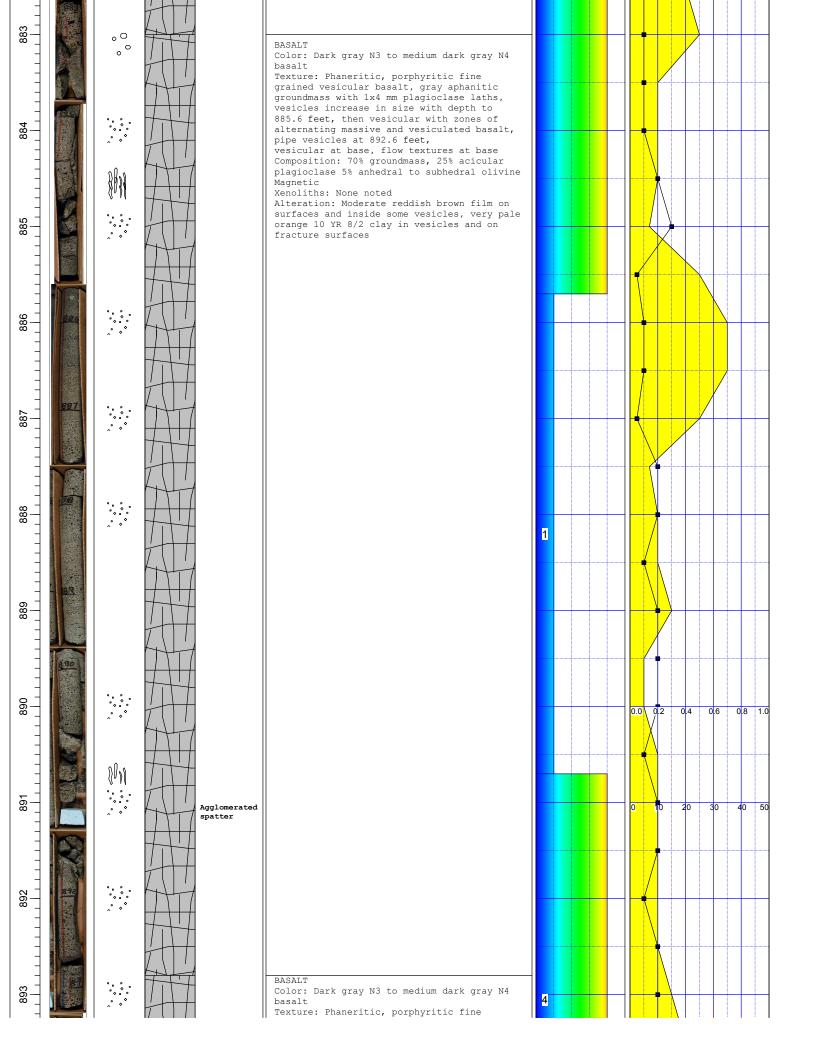
Alteration: Moderate reddish brown film on surfaces and inside some vesicles, dark gray to black film inside many vesicles, especially near base, very pale orange 10 YR 8/2 clay in vesicles and on fracture surfaces, may be debris inclusion, at 851 feet, olivine shows reddish alteration, top and base show flow textures and cindery surfaces

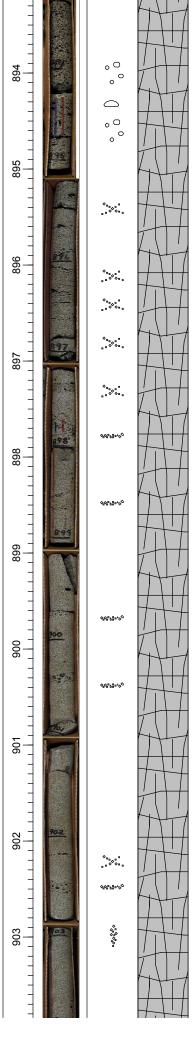








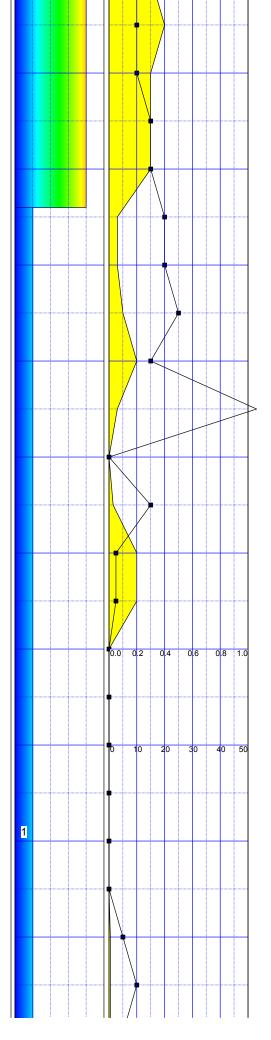


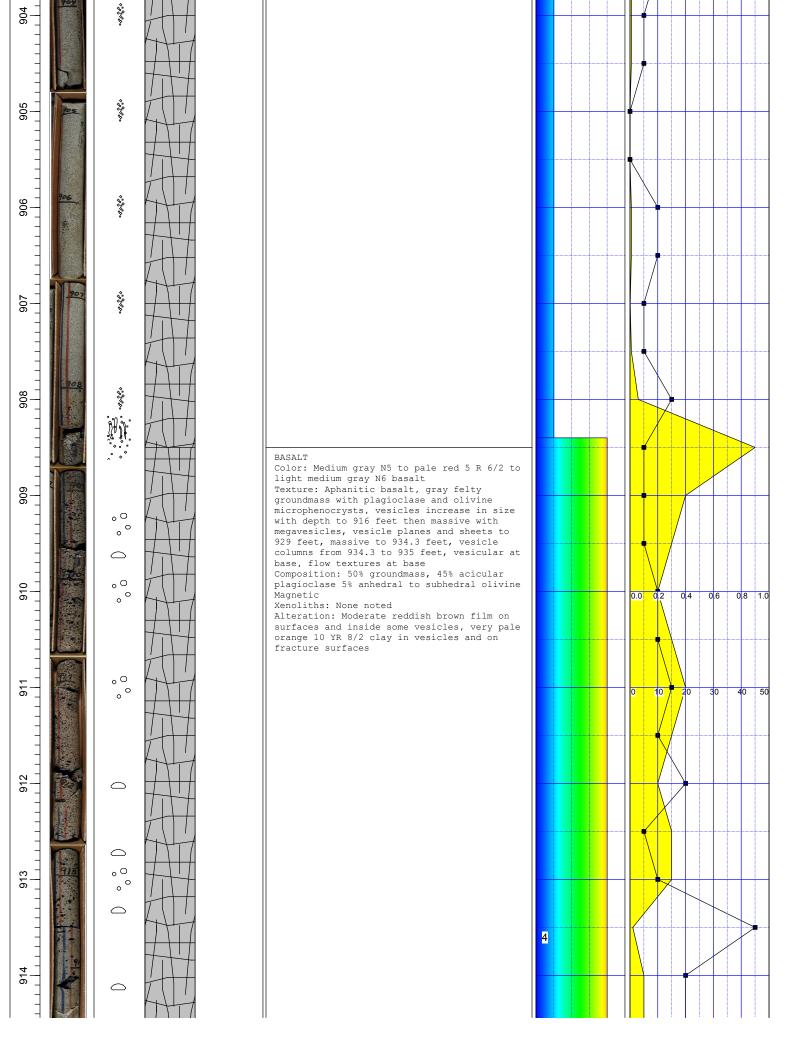


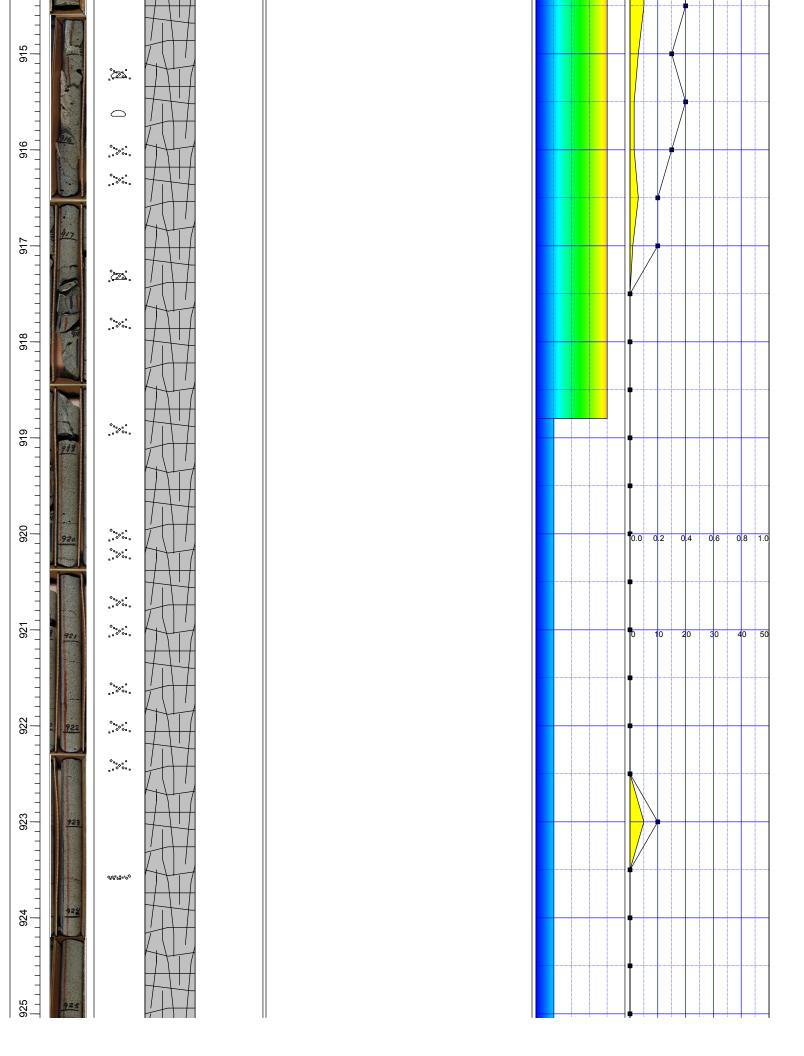
grained vesicular basalt, gray felty groundmass with 1x4 mm plagioclase laths and small olivine microphenocrysts, vesicles increase in size with depth to 893.3 feet then massive to diktytaxitic with vesicle planes and sheets to 895 feet, vesicle columns from 903 to 906.6 feet, pipe vesicles at 908.3 feet, vesicular at base, flow textures at base Composition: 50% groundmass, 45% acicular plagioclase 5% anhedral to subhedral olivine

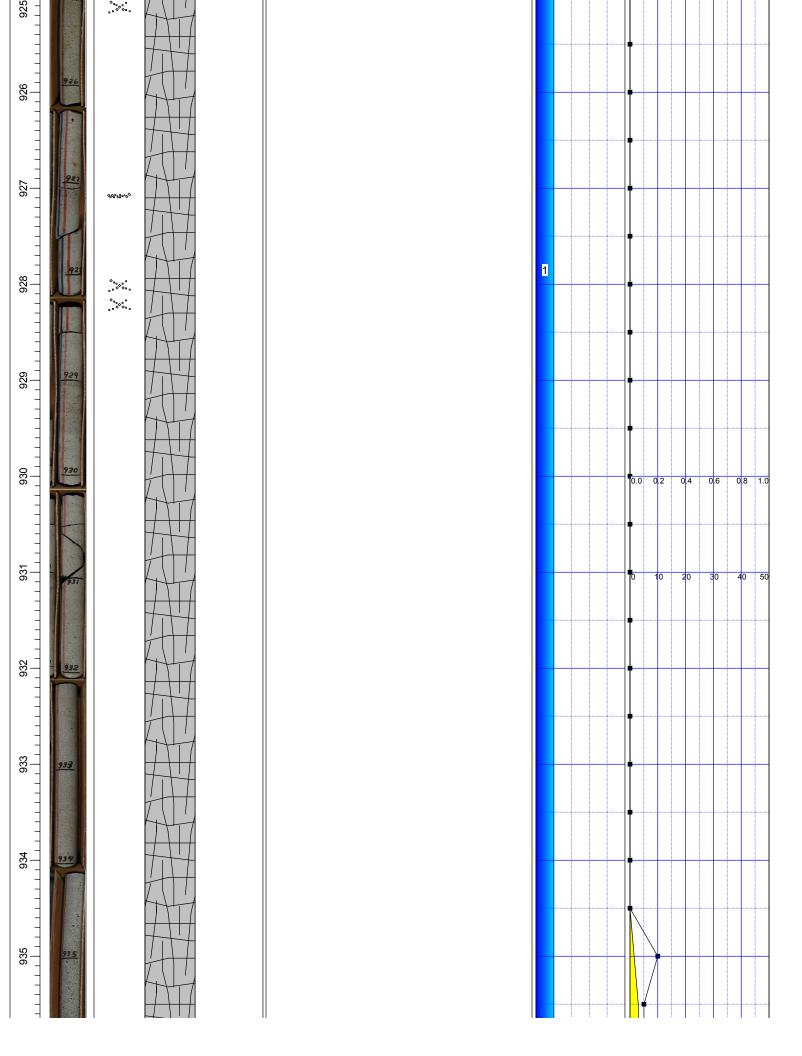
Magnetic Xenoliths: None noted

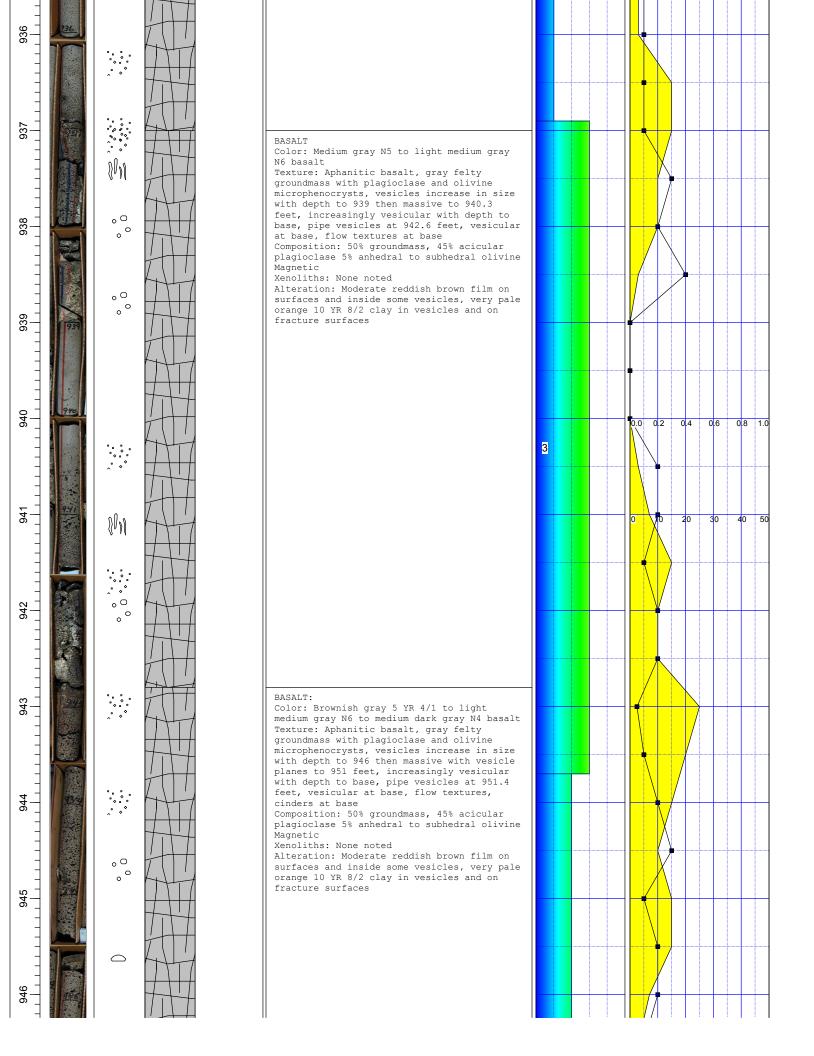
Alteration: Moderate reddish brown film on surfaces and inside some vesicles; very pale orange 10 YR 8/2 clay in vesicles and on fracture surfaces, calcite on fracture surface at 894.3 feet and in a few vesicles

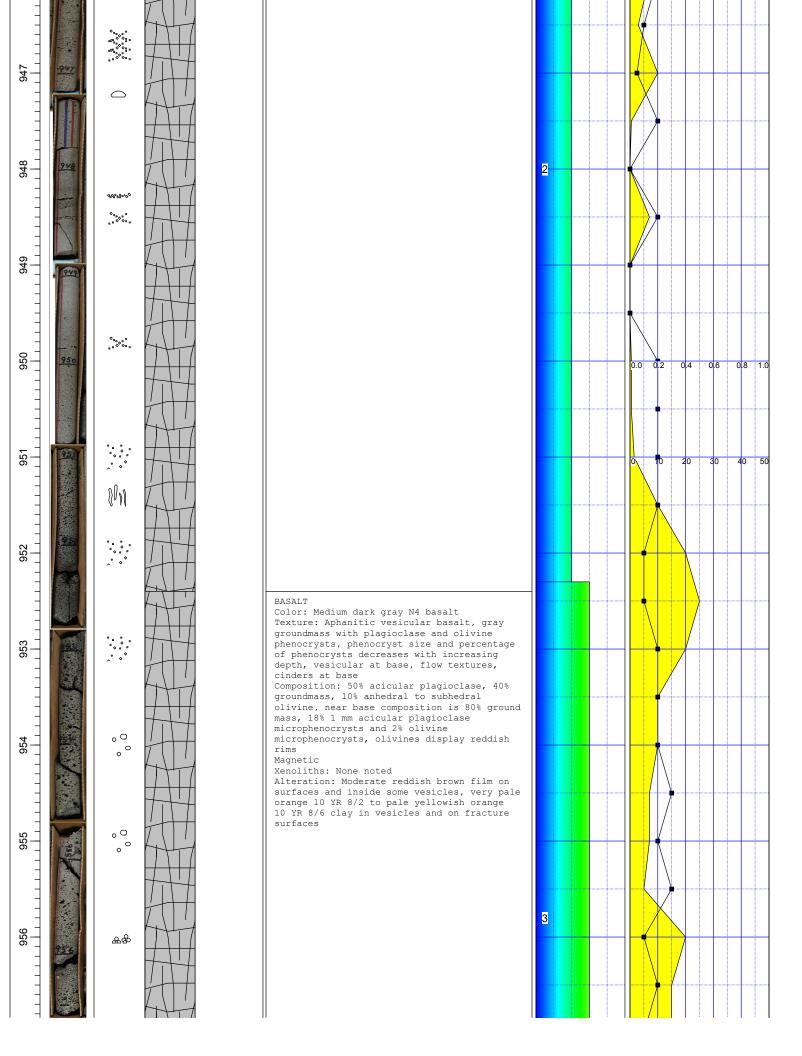


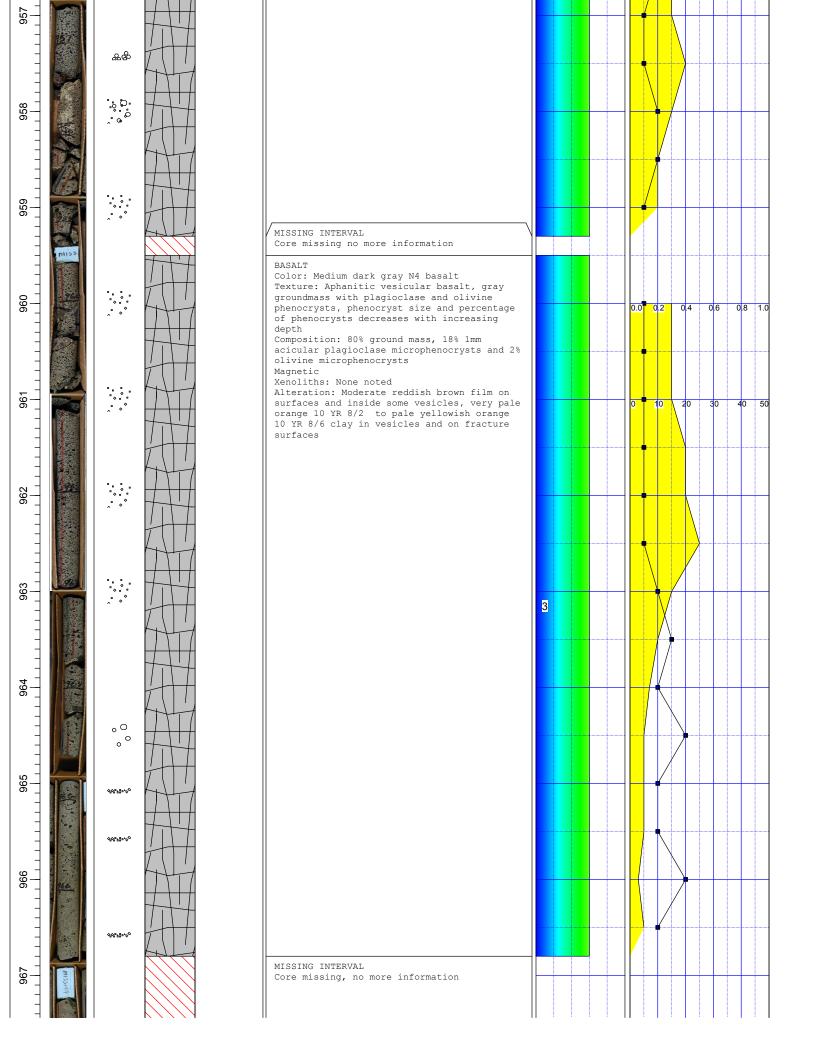


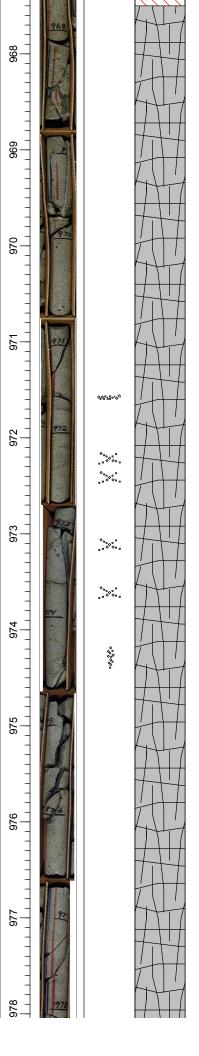












BASALT

Color: Medium dark gray N4 basalt

Texture: Aphanitic basalt, gray groundmass with plagioclase and olivine

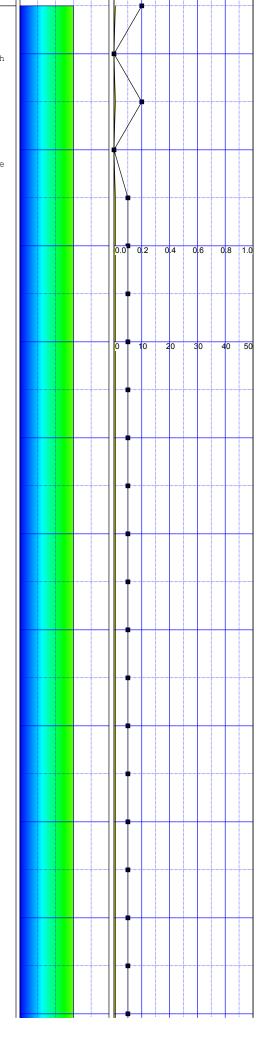
microphenocrysts, a few vesicular zones with large vesicles, rare vesicle sheets and planes, vesicular with flow/mold texture at base

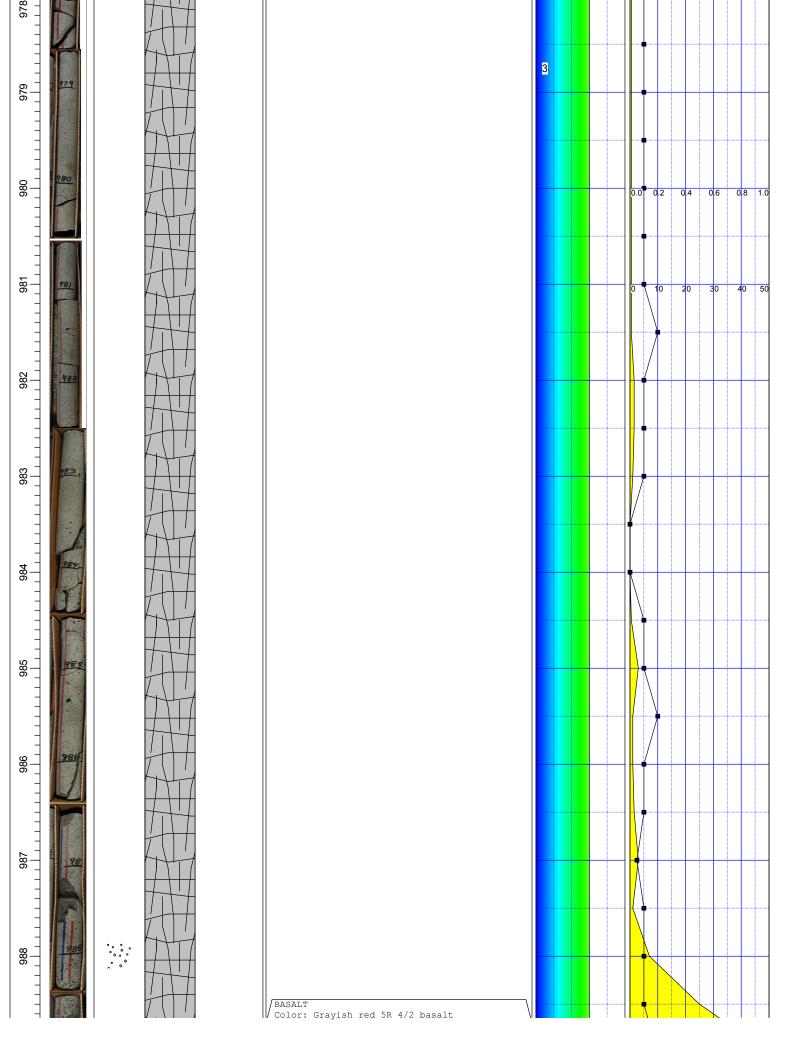
Composition: 70% ground mass, 20% 1mm acicular plagioclase and anhedral olivine microphenocrysts

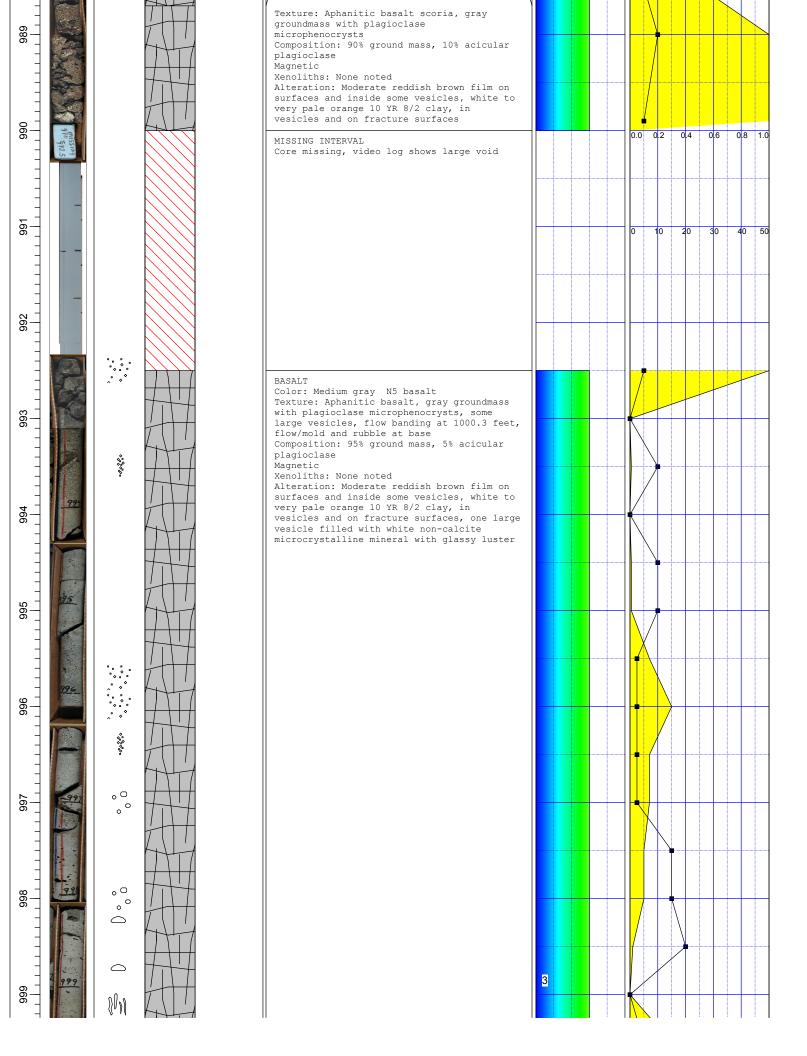
Magnetic

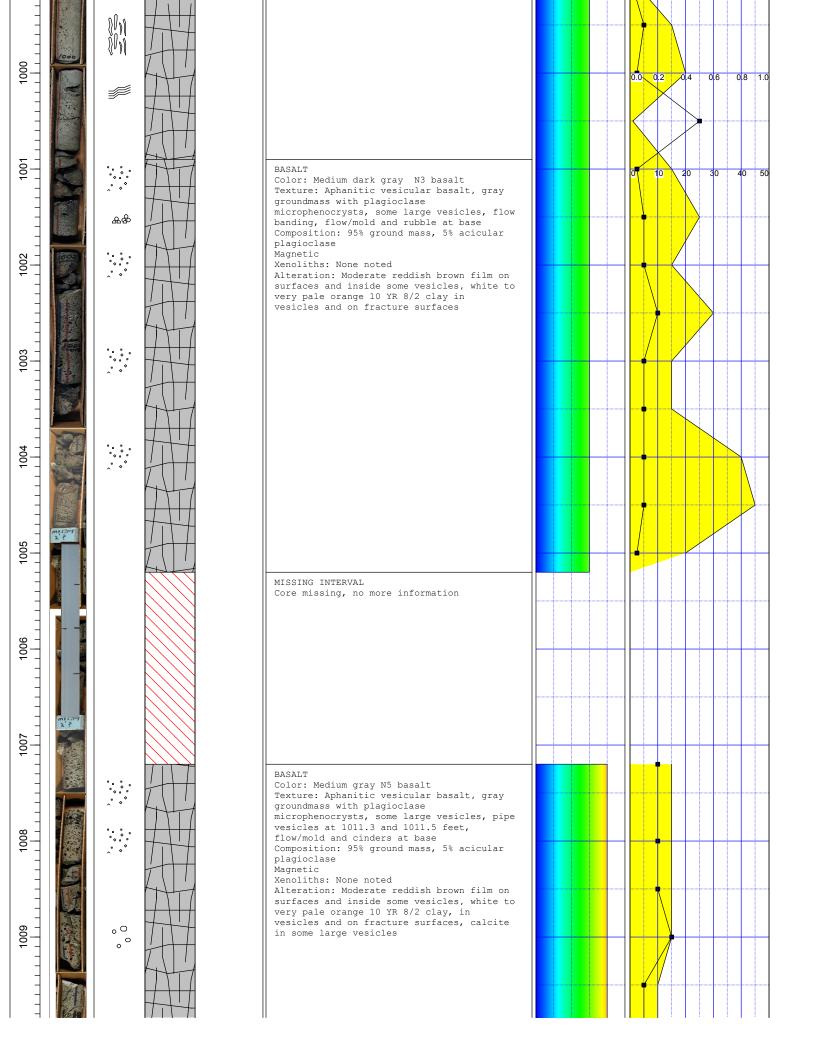
Xenoliths: None noted

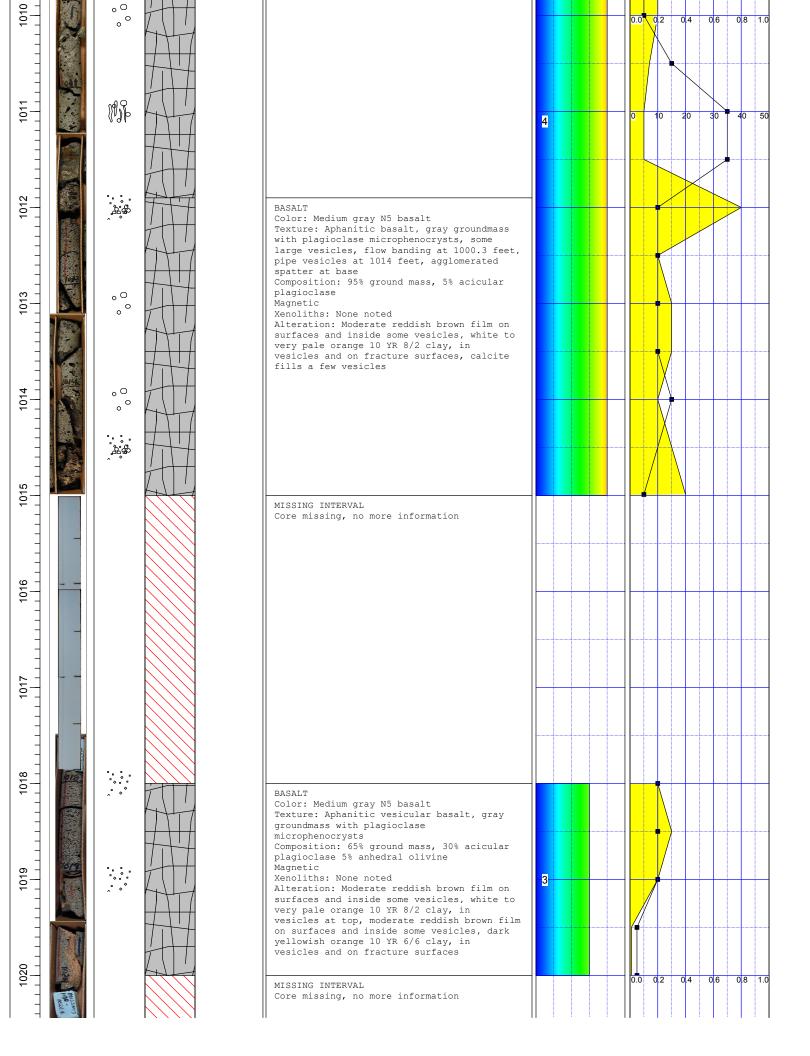
Alteration: Moderate reddish brown film on surfaces and inside some vesicles, very pale orange 10 YR 8/2 to pale yellowish orange 10 YR 8/6 clay in vesicles and on fracture surfaces

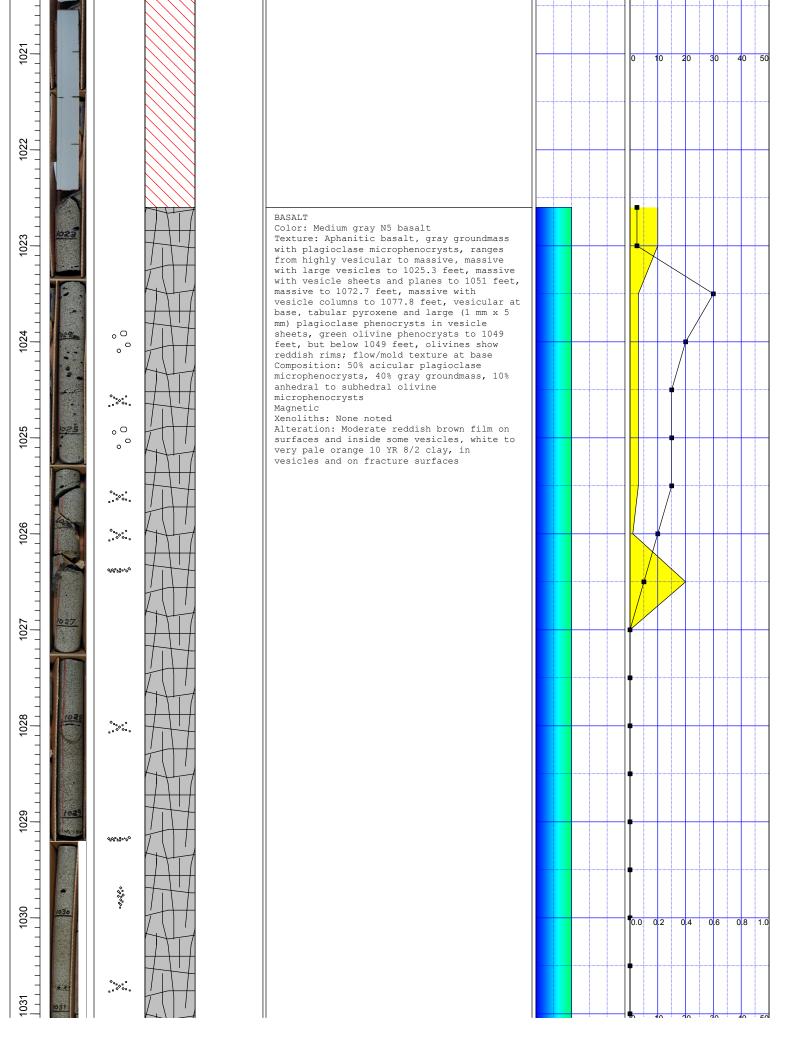


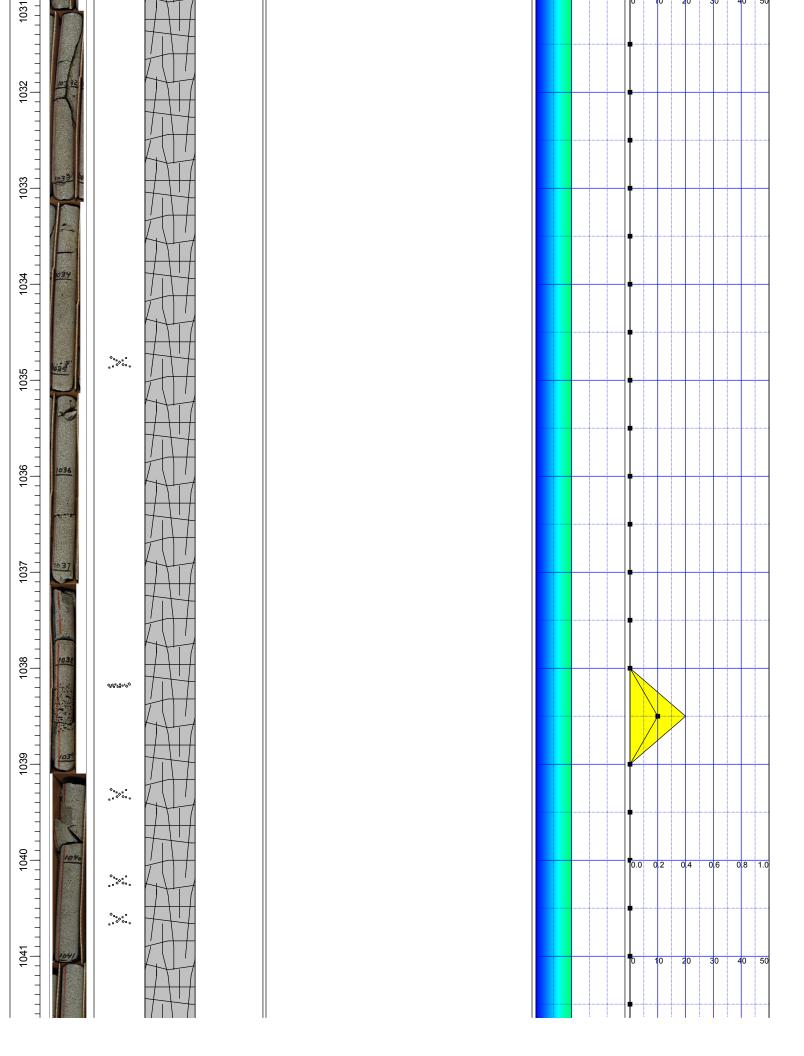


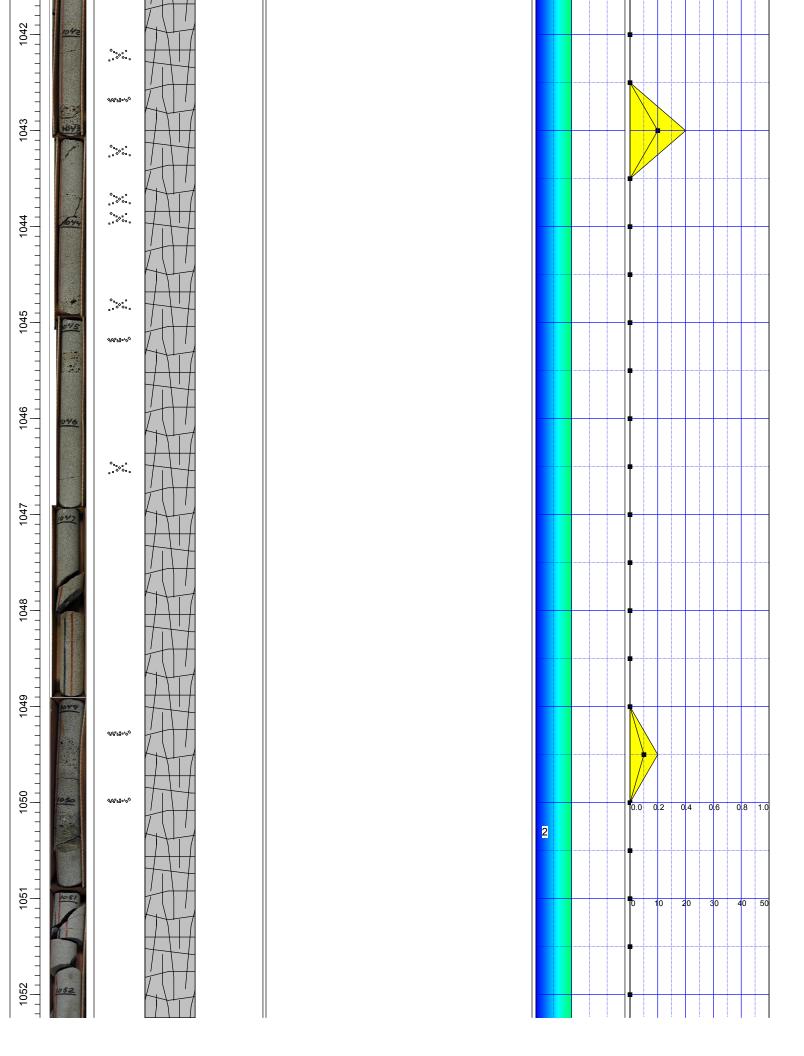


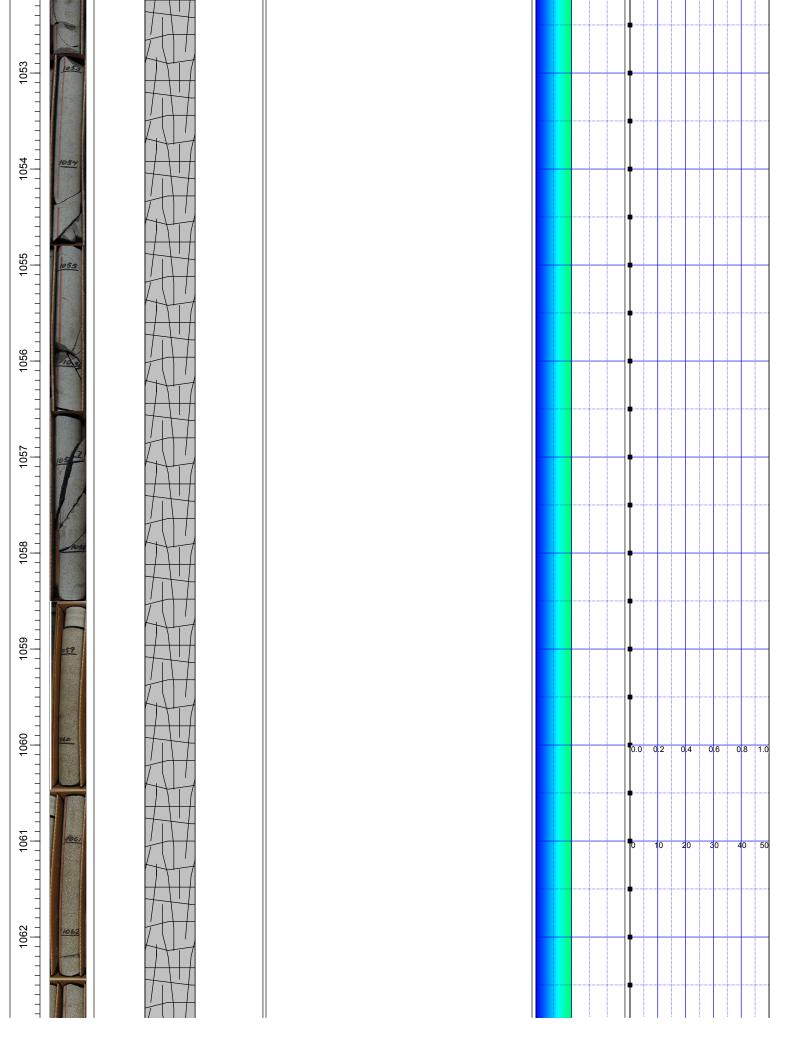


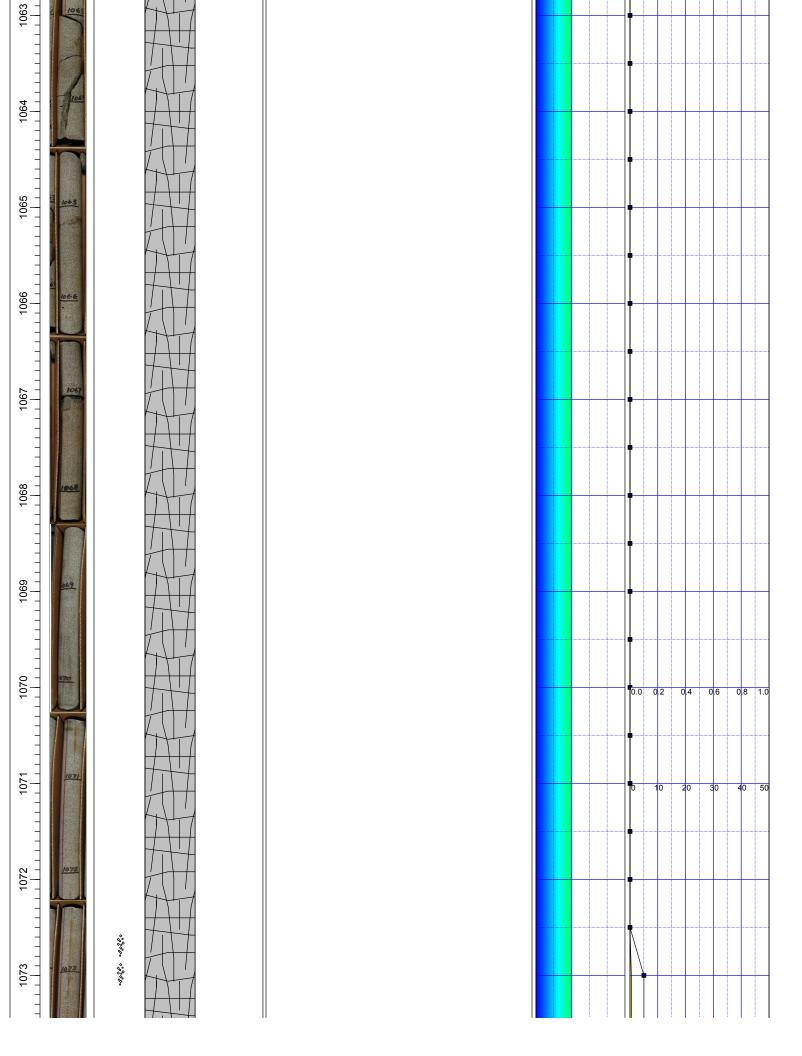


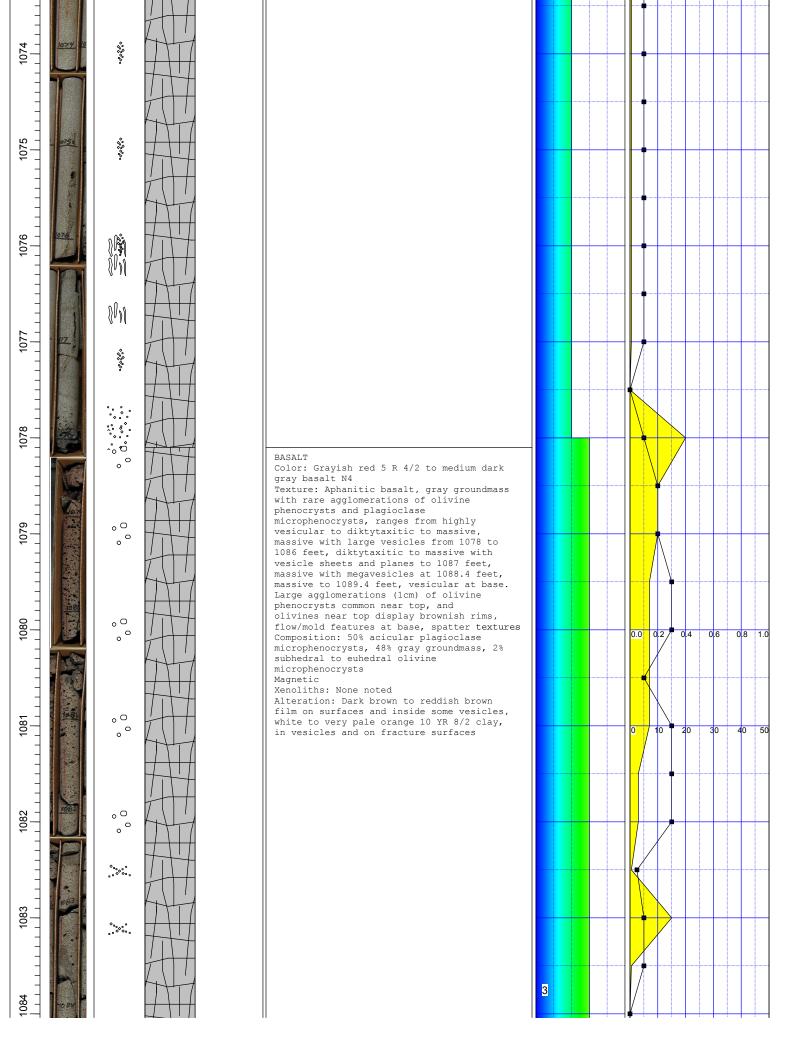


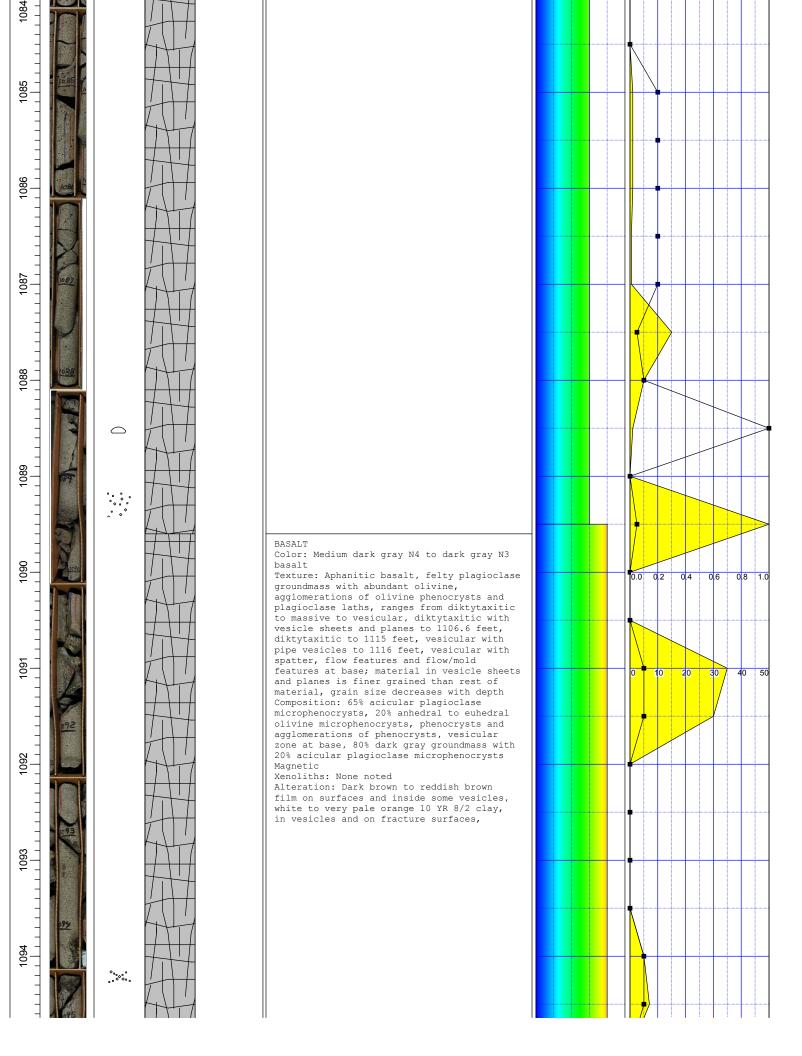


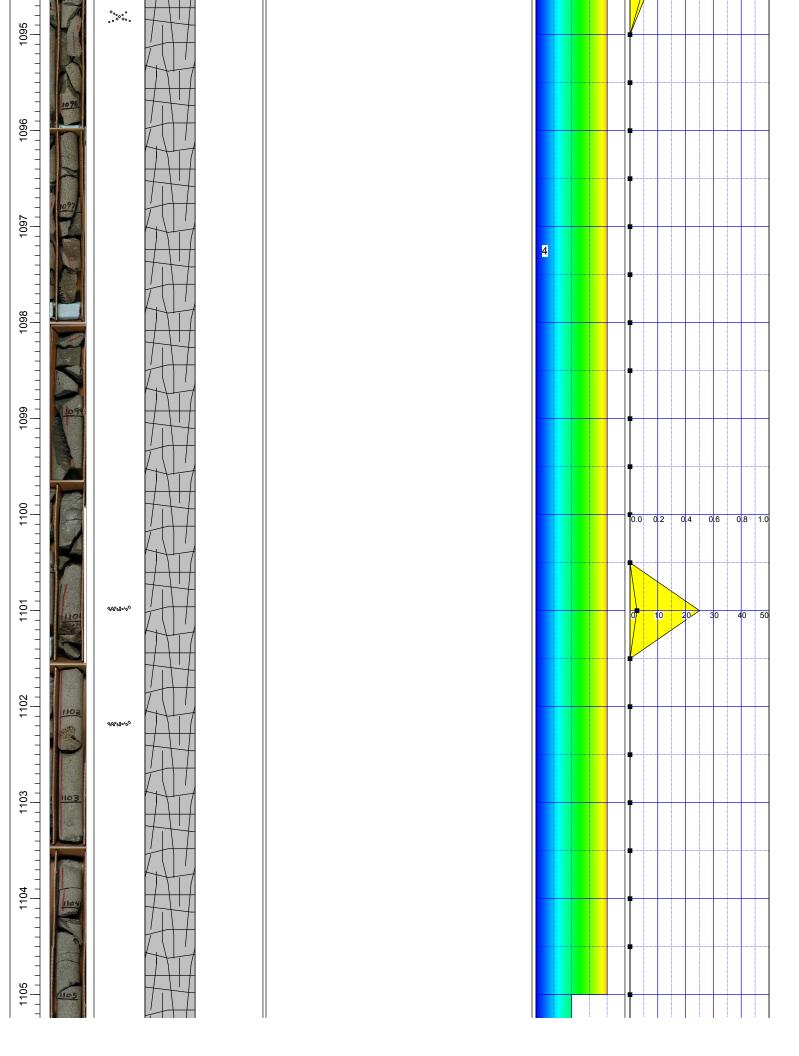


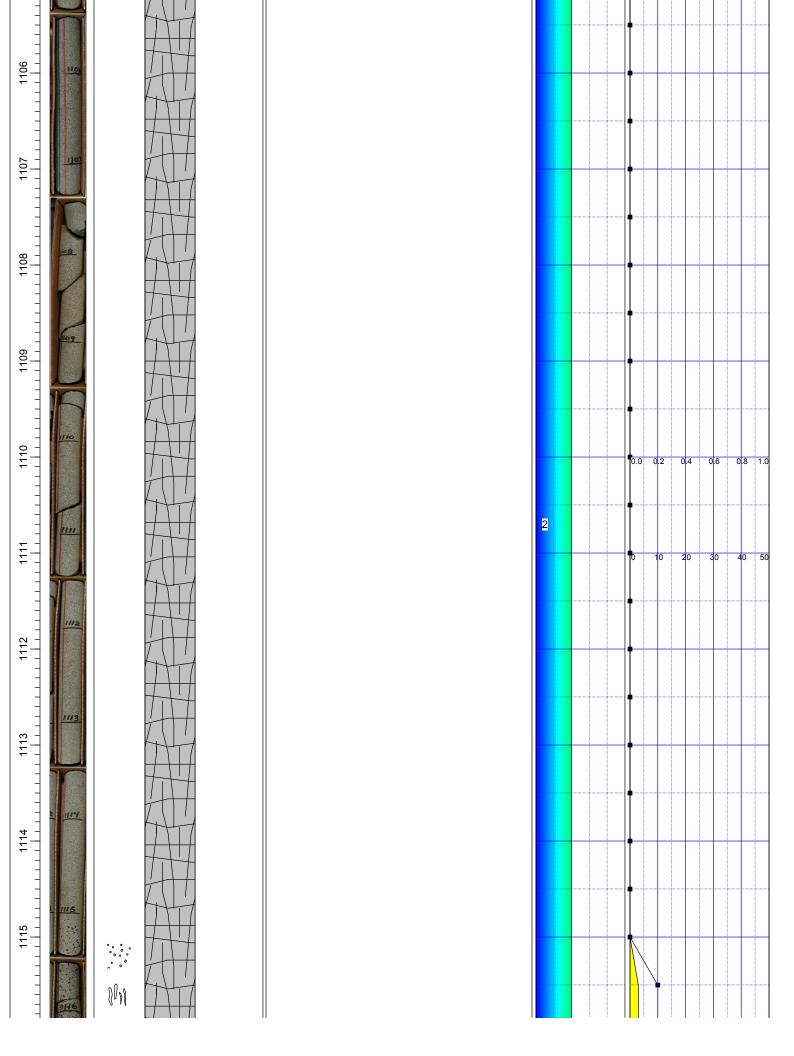


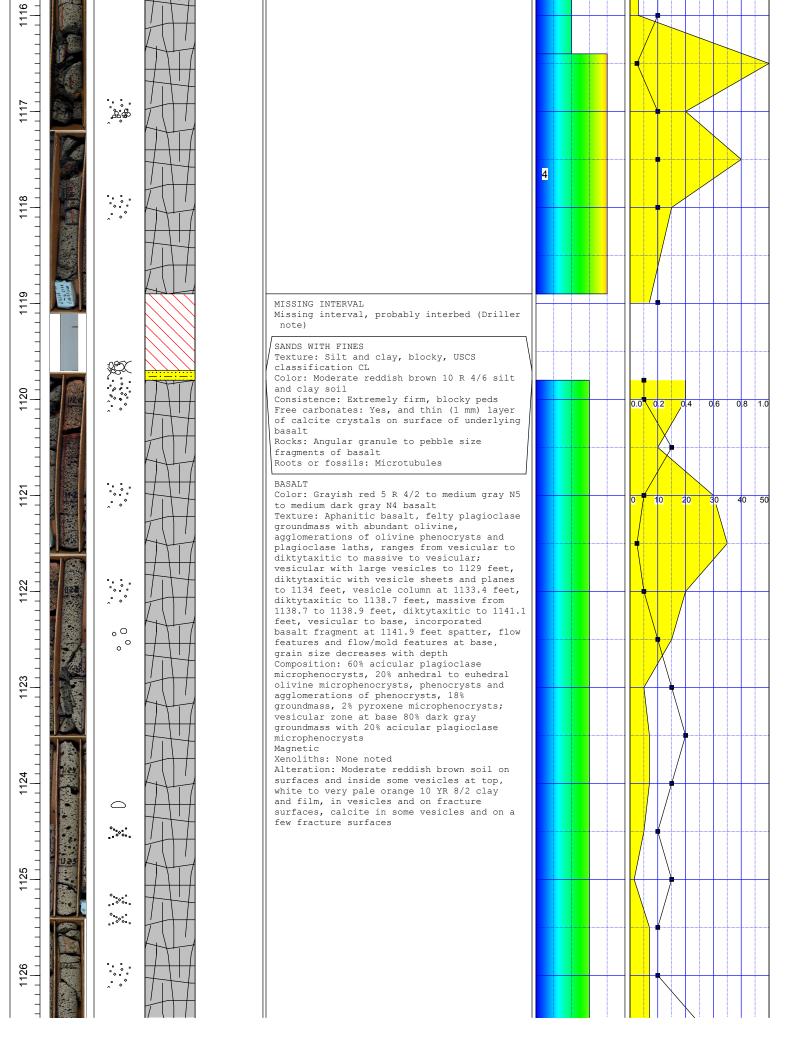


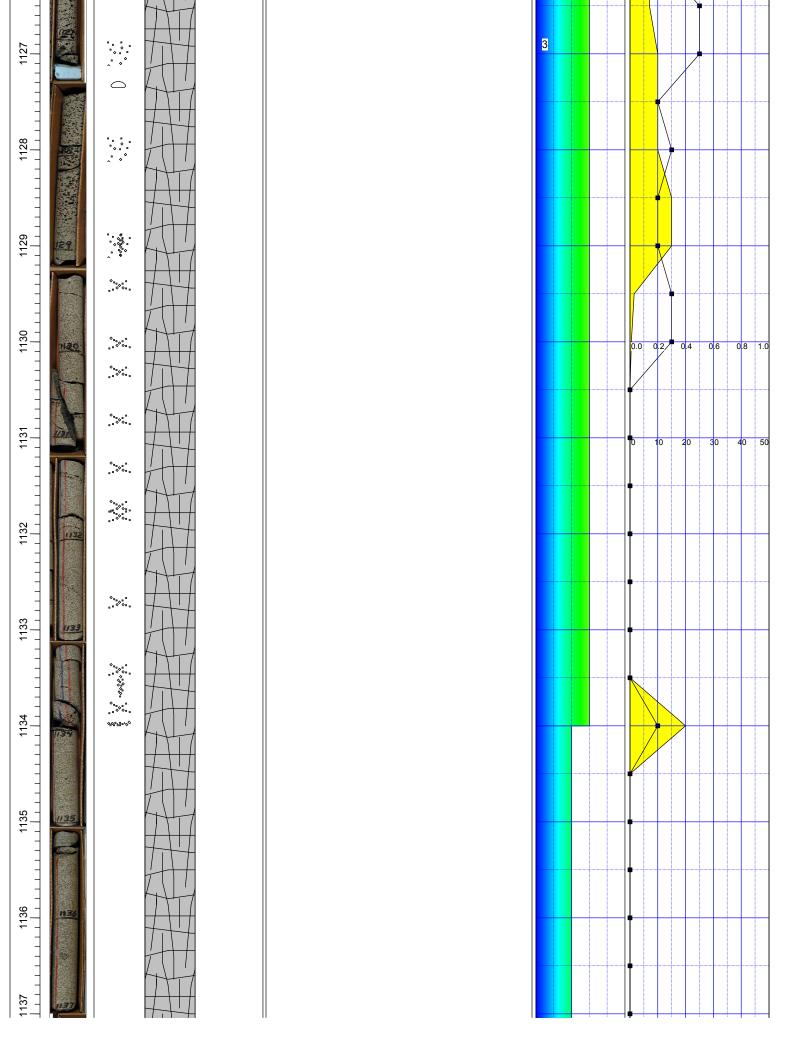


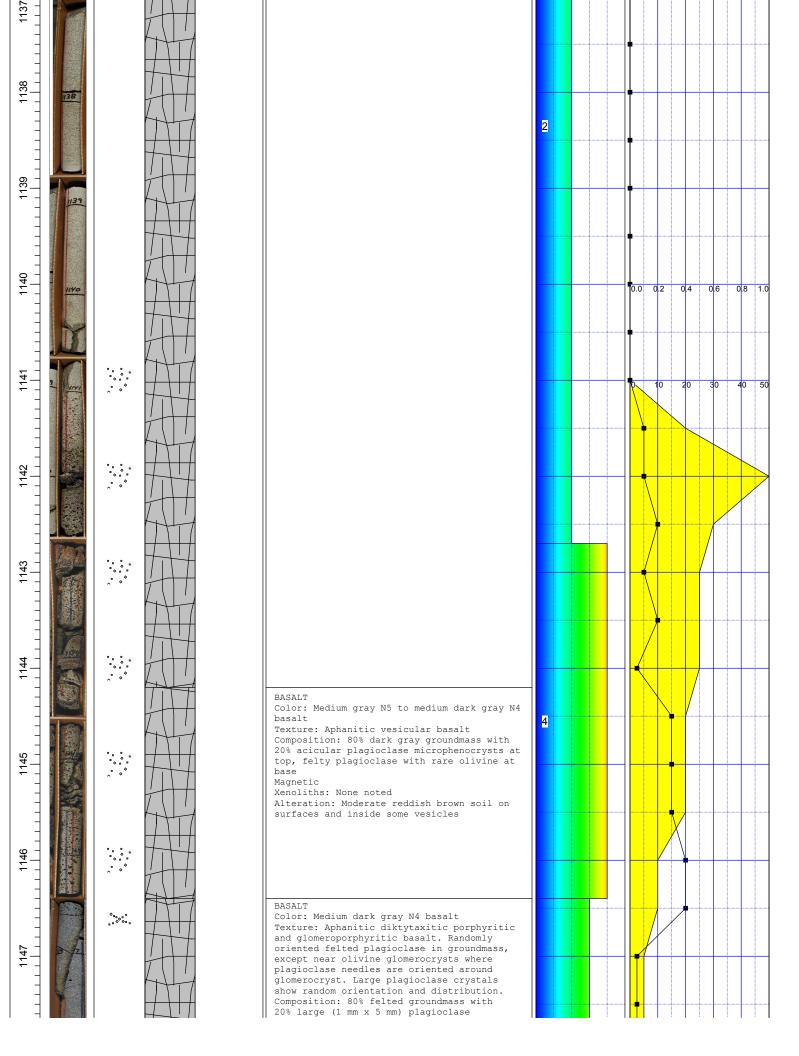


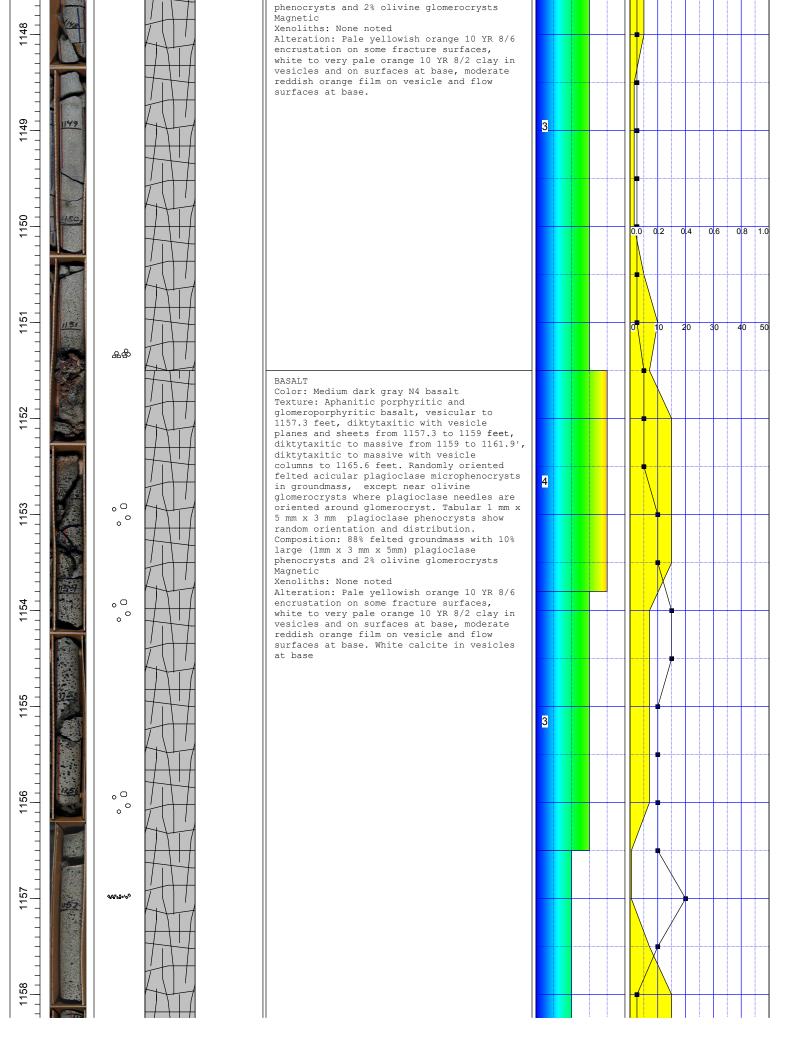


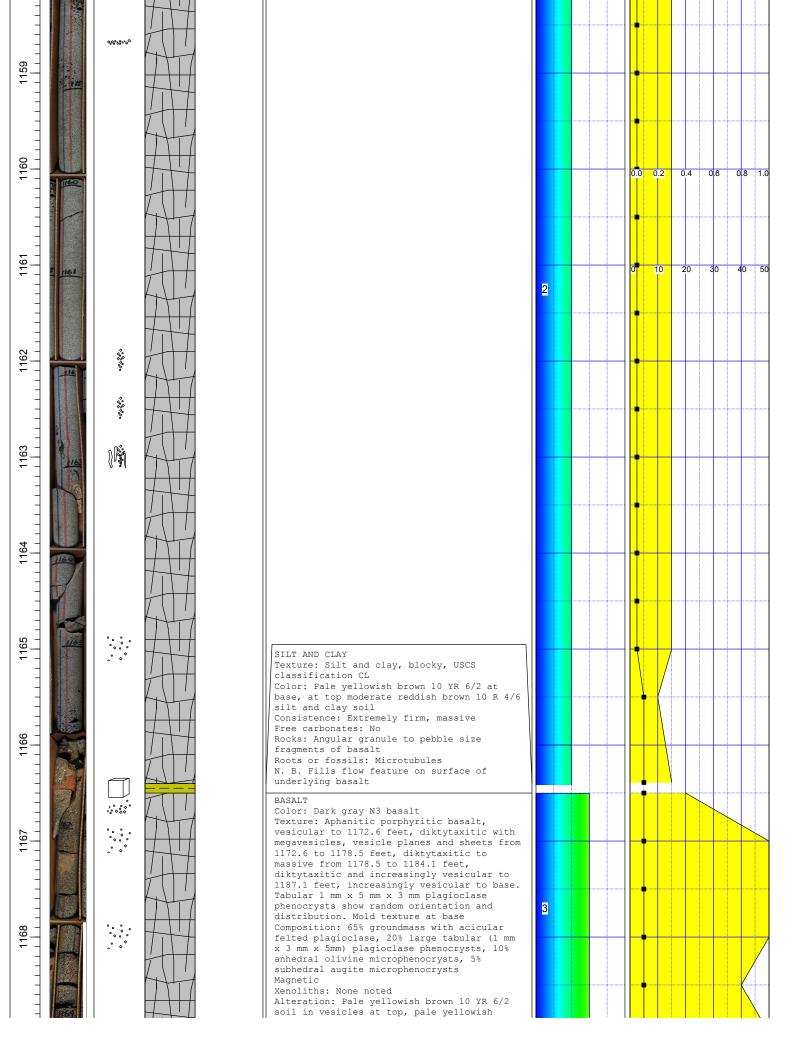


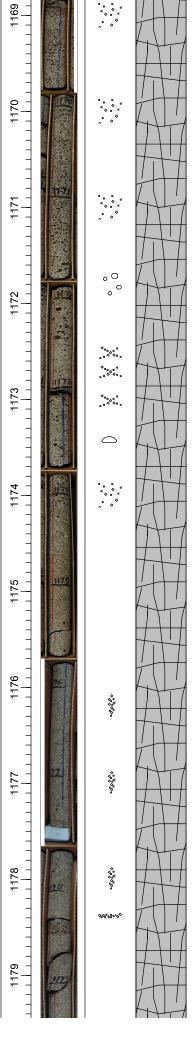












orange 10 YR8/6 encrustation some fracture surfaces and in some vesicles, white to very pale orange 10 YR 8/2 clay in vesicles and on surfaces at base, moderate reddish orange soil on vesicles and flow surfaces at top; moderate reddish orange film on mold surface at base, white calcite in some large vesicles; soft, white chalky luster, acicular to botryoidal mineral in some vesicles

